CEREAL COURIER

Official Messenger of the Office of Cereal Investigations
Bureau of Plant Industry, U. S. Dept. of Agriculture
(NOT FOR PUBLICATION)

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Vol. 13 January 15, 1921 No. 1

Personnel (Jan. 1-15) and Field Station (Dec. 16-Jan. 15) Issue

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PERSONNEL ITEMS

George J. Burt, scientific assistant, who has been assisting Mr. Holbert in corn rot investigations at Bloomington, Ill., resigned December 31, the work for which he was appointed having been completed.

Nathaniel L. Carmichael, field assistant in the barberry eradication campaign in Iowa, has completed the work for which he was appointed and has resigned, effective December 31.

Stewart R. Cooper, field assistant in the barberry eradication campaign in Iowa, resigned December 9 on completion of the field work for which he was appointed.

Sherlock M. Dietz, who resigned a few months ago to pursue graduate study at Cornell University, has been reappointed assistant pathologist, effective January 17, and will assist Dr. I. E. Melhus in crown rust studies at the Iowa station.

Arthur C. Dillman, for the past several years engaged in breeding drought-resistant forage crops for the Office of Alkali and Drought-Resistant Plant Breeding Investigations, has been transferred to the Office of Cereal Investigations, effective January 16, to take charge of the flax project.

Miss Hazel I. Gibbon, has been compelled to return to her home at Zanesville, Ohio, because of ill health, and her appointment was therefore terminated on December 31.

William Herrling, who has been assisting Dr. A. G. Johnson in cereal disease investigations at the Wisconsin Agricultural Experiment Station since October 1, has resigned, effective January 10, to accept a position with the Wisconsin station.

George N. Hoffer, pathologist in charge of corn root, stalk, and ear rot investigations in cooperation with Purdue University, presented the results of his experiments at the Farmers' Short Course at Iowa State College on January 5.

James R. Holbert presented a paper before the American Society of Agronomy at Chicago December 31, entitled "Progress Report on Corn Disease Investigations." This is in addition to the papers listed in the last issue of the Cereal Courier.

Elmer C. Loy, field assistant in the barberry eradication campaign in Iowa, resigned November 30, the field work for which he was appointed having been completed.

Miss Marie L. Teagle, stenographer for the cerealist in charge, resigned January 15. She will be married on January 26 to Rev. A. R. Hedstrom and will reside in La Grange, Ill.

W. H. Tisdale, formerly in charge of investigations of rice diseases, arrived in Washington January 1, to become pathologist in charge of cereal smut investigations, succeeding Dr. George M. Reed, who, as previously noted, resigned December 31.

Robert G. Zellmer, who has been under appointment as field assistant since November 1, in conne ction with cereal disease investigations in cooperation with the Wisconsin Agricultural Experiment Station, has resigned, effective January 31.

VISITORS

Miss Sarah C. Berry, who operates a 5,000 acre farm near Hendersonville, Tenn., visited the Office January 6, to obtain information regarding cereal varieties suitable for growing in her section .

Prof. C. C. Georgeson, agronomist of the Alaska Agricultural Experiment Stations, with headquarters at Sitka, Alaska, was an Office visitor January 6. Professor Georgeson had with him samples of some very interesting new varieties of wheat and barley which had been produced in his plant breeding experiments.

Dr. George N. Hoffer, pathologist in charge of investigations of root, stalk, and ear rots of corn in cooperation with Purdue University, was an Office Visitor January 15 while en route to Atlantic City to present the results of his experiments before the annual meeting of the American Canners' Association, January 17 to 21.

Dr. E. C. Stakman, pathologist at the Minnesota Agricultural Experiment Station and agent in cooperative investigations of stem rust of cereals, was in Washington January 6 to 8 to consult with Dr. Ball and Dr. Humphrey regarding the preparation of manuscripts for publication and future plans for rust investigations.

Miss Louise M. Venable, who formerly assisted Mr. C. H. Clark in flax investigations, was an Office visitor January 7, while en route from a holiday visit in New York and New England to her home in Chapel Hill, N. C.

FIELD STATION CONDITION AND PROGRESS

HUMID EASTERN STATES (South to North)

ILLINOIS

Cooperative Corn Rot Investigations, Bloomington. (J. R. Holbert). The first Utility Corn Show at Galesburg, Ill., was entirely successful in every particular. The following outstanding facts may be of interest:

There were inquiries from experimental workers from twelve different States.

There were 110 entries, from more than 20 counties. These included more than 2,000 ears of corn.

Many of the fine looking entries were very badly infected with both Diplodia and Fusaria.

Many of the entries contained from two to four dead ears. Others that contained no dead kernels were frequently badly diseased.

No sample was entirely disease-free, even the ten ears that won sweepstakes containing one diseased ear. The other nine were outstanding in general appearance, vigor and vitality, and freedom from disease, and were of the type that we have been finding to be characteristic of our high yielding disease-free corn.

The sweepstakes fifty ear sample was exhibited by Mr. Hunt, who has been following our recommendations very closely for the last three or four years, especially last year.

The man who won first in the central division conducted one of our experimental plots at Decatur last year.

The man who won first in the open to the world division was also one of our cooperators and had previously germinated his corn.

Another one of our cooperators in Rock Island County won third on both the 10 ear and 50 ear exhibits in his section.

Representatives from practically every corn county in the State of Illinois were present at the corn show.

There were representatives from five very prominent agricultural papers and representatives from several adjoining States.

The Knox County Farm Bureau, in its annual meeting on January 6, not only endorsed this show, but recommended that the Illinois Agricultural Association provide for a great Utility Corn Show next year. Definite plans are already under way for this show to be held in 1922, which will probably be the greatest educational event of that year in this State. This show will be supported by the Illinois College of Agriculture, the Illinois Corn Breeders Association, and certain members of the Illinois Corn Growers Association, and also by the Illinois Agricultural Association and the Agricultural press. As soon as these suggested plans are definitely outlined by the committee that will be appointed by the Illinois Agricultural Association complete copies will be sent

I feel that the success of this movement and the guarantee of its continued success on a very large scale next year will mean much to the recognition and success of our corn investigations.

The College of Agriculture and Extension Division are planning to issue an 8 page circular describing the score card that was used and other features regarding this first Utility Corn Show.

MISSOURI

State Experiment Station, Columbia (L. J. Stadler) (Jan.15) Up to the 10th of January the winter in Missouri has been extremely mild with the exception of a few days of rather cold weather late in December. Winter wheat over the State in general is in very good condition. In the last few days we have had a heavy snowfall and the weather has been rather cold.

The acreage and yield per acre of the cereal crops in Missouri in 1920 as reported by the State Board of Agriculture, cooperating with the United States Bureau of Crop Estimates, are as follows:

Corn	6,215,000	acres	32	bushels	per acre
Winter wheat	2,600,000	acres	12½	bushels	per acre
Spring wheat	17,000	acres	13	bushels	per acre
Oats	1,775,000	acres	30	bushels	per acre
Barley	8,000	acres	28	bushels	per acre
Rye	50,000	acres	12	bushels	per acre
Buckwheat	16,000	acres	16	bushels	per acre
Rice	465	acres	50	bushels	per acre
Grain sorghum (for seed)	6,000	acres	50	bushels	per acre

The yields of corn varieties on the outlying experiment fields in 1920 were as follows:

Variety	Yield in Bushels per acre				
	Kirksville	Kennett	Maryville	Warrensburg	Cuba
Boone County White	20.2	17.8	63.5	34.2	
Commercial	21.2	16.8	65.5	63.5	
St. Charles White	19.7	16.5	59.8	38.5	15.5
Reid's Yellow Dent	19.6	19.3	63.7		
Leaming	19.1		66.2	25.0	
St. Charles Yellow	17.5	22.7	63.9	46.1	
Bloody Butcher	21.3			42.8	12.3
Biggs's Seven-Bar		21.9			
Eureka Ensilage		24.4			
Calico			52.9	49.1	
Silvermine			62.9		13.8
White Pearl					16.9

WYOMING

Cheyenne Experiment Farm, Cheyenne (A. L. Nelson) (Dec. 16) The temperatures have been rather mild for the past fifteen days. The maximum temperature, 63°, occurred December 2 and the minimum, 12° , occurred during the night of December 12. The last few days have been marked by high winds. The average wind velocity on December 13 was 18.3 miles per hour resulting in some soil blowing.

There has been only 0.01 inch of precipitation during the past fifteen days. The weather since September 15 has been very dry. This condition has caused the winter wheat to lose considerable vitality, especially that seeded in disked oat stubble. This year the winter nursery was seeded in oat stubble, but has not made sufficient growth to make a count of the plants; in fact, a considerable part of the seed has not germinated.

The range east of the Rocky Mountains is in the best of condition and the open weather has permitted cattle to graze continuously. In view of market conditions this is a great relief to the cattle raisers. Sheep and cattle west of the Rocky Mountains have been less fortunate, as heavy snows have caused severe losses. These losses have been augmented by the unsatisfactory financial situation. Forage is plentiful but stockmen do not have funds with which to procure it.

(Jan. 3.) Weather conditions have been very favorable for all concerned. The temperatures have not been excessive, the lowest, 7°, occurring December 23 and 24. These temperatures were followed by a rather light snow of 0.19 inch, most of which melted where it fell. The warm weather which followed caused most of the winter wheat which had not previously sprouted to germinate and in some cases to emerge. That seeded in disked oat stubble is more backward in this respect.

The following are the average yields of oats seeded in quadruplicate fortieth-acre plats in 1920:

C.I.No.	Variety.	Bu. per acre.
Early group:		
729	Albion	34.7
165	Sixty-Day	33.8
787	Richland	33.8
459	Kherson	33.3
841	Nebraska No.21	32.2
Midseason group:		
492	Ligowo	35.1
731	Abundance	32.0
619	Colorado No. 37	31.1
493	Golden Rain	30.6
714	Silvermine	30.6
134	Swedish Select	28.9
Late group:		
732	Banner	28.7
768	Black Tartarian	22.0

The average yield of all varieties on disked corn stubble was 27.5 bushels and on fallow 34.7 bushels per acre. Spring emmer grown with the oats yielded 28.7 bushels.

Following are the average yields of barley seeded in quadruplicate fortieth-acre plats in 1920:

C.I.No.	Variety.	Bu. per acre.
Two-rowed hulled:		
926	Horn	25.0
531	Hannchen	23.3
914	Italian	22.1
658	White Smyrna	20.6
187	Svanhals	18.4
878	Black-hull	12.4
Six-rowed hulled:		
936	Trebi	26.9
690	Coast	24.3
937	Sandrel	23.3
1176	Meloy	23.2
927	Odessa	21.5
877	Horsford	11.3
638	Manchuria	10.0

Six-rowed naked:

1106	Black Hull-less	17.1
620	Himalaya	16.7

The average yield of all varieties on disked corn stubble was 19.0 bushels and on fallow 20.1 bushels per acre.

Average yields of flax seeded in quadruplicate fortieth-acre plats during 1920 were:

C.I.No.	Variety.	Bu.per acre
18	Fargo Common	6.3
6	Montana Common	5.9
19	Russian	5.5
3	Damont	5.5
8	N.D.R.No.52	4.8
15	Idaho Common	4.7
30	Smyrna	4.7
5	Stepan	4.1
13	N.D.R.No.114	3.9
63	Wyoming Common	2.8
7	Turkish	2.0
12	Primost	1.8

The average yields of all varieties seeded on disked corn stubble was 4.0 bushels and on fallow 4.6 bushels per acre. The yields of flax were greatly reduced by heavy hail storms which occurred during the month of June.

A feeding experiment with dairy cows was started January 3 to determine the relative feeding value of sunflower silage as compared with corn silage.

NORTH DAKOTA

Dickinson Substation, Dickinson (Ralph W. Smith) (Jan.3) The winter thus far has been unusually mild and calm with only about an inch of snow in November and a like amount in December. There were about 10 days of cold winter weather in November and a period of about the same duration in the latter part of December. The minimum temperature for December was 23° on the 27th.

The total precipitation for the past year was 15.70 inches, which is about a half inch above normal. The spring months were deficient in rainfall but during the summer and early fall the rain was slightly above normal and well distributed.

The acreage of winter rye in this region is small and although the winter has been mild there has not been enough snow to afford much protection.

Supt. Moomaw of this substation is now in Washington, D. C.

MONTANA

Milk River Basin Substation, Moccasin, Mont. (Ralph W. May) (Jan 1.) Winter wheat looks better than a month ago, especially the late sown fields. Close examination, however, shows that the plants are still alive and that a great many plants have never emerged from the soil. A large amount of winter wheat was sown into the fallow is covered with a thin layer of loose wind-blown soil in the bottom of the drill furrows. This is especially true of the furrow drill sowings. I cannot estimate at present to what extent this will injure the stand of wheat.

The precipitation for December was 0.21 inch, which is less than one-third of the average for 22 years. The total precipitation for the entire year is 16.59 inches and the seasonal (April 1 to July 31) is 13.14 inches. Since August our precipitation has been very light.

Temperatures during the month have been below zero on six days, the lowest, -21°, being recorded on December 22. The highest temperature recorded was 52° on December 1.

CALIFORNIA

Rice Field Station, Biggs (J.W.Jones) (Jan.12) The weather is still wet. Though we have had two good drying days the past week. Farmers were talking about starting to harvest again yesterday, but today a light rain is falling.

It seems to me that a farmer is foolish to try to finish harvesting until spring, because rice is too cheap to justify an expenditure of 50 to 60 cents per sack in harvesting and then have damaged rice which is unsalable. The market at present is about $1.75 for the best grade of paddy. In the spring the cost of thrashing should be considerably less and there may be a better market. While the rice heads may be comparatively dry now the butts of the bundles are wet. In thrashing, the moisture from the straw wets the grain and damaged rice results.

C E R E A L C O U R I E R

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OCT

Vol. 13 JANUARY 31, 1921. No. 2.

Personnel (Jan. 16-31) and Field Station (Jan. 16-31) Issue.

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PERSONNEL ITEMS

Hugo W. Albertz, agent in connection with wheat-scab investigations in cooperation with the Wisconsin Agricultural Experiment Station, has resigned effective January 31.

Dr. Carleton R. Ball left Washington January 16 for Columbia, Mo., where he discussed "The Value of Research in Grain Crops" before the Missouri Corn Growers' Association on January 18. He returned to Washington January 20.

Chester Barlow has been appointed unskilled laborer, effective February 1, in connection with the cereal disease investigations in cooperation with the Wisconsin Agricultural Experiment Station.

Dr. George N. Hoffer, pathologist in charge of investigations of corn root, stalk, and ear rots, conducted a demonstration of the modified rag-doll method of testing sweet corn seed for germination and disease, during the convention of the National Canners' Association at Atlantic City, N. J., January 17 to 22. This demonstration was made by the Office of Cereal Investigations and the Indiana Agricultural Experiment Station in cooperation with the Bureau of Raw Products Research of the National Canners Association. Considerable interest was taken in this new method of testing seed stocks and it will be used not only for testing sweet corn, but for pea stocks as well.

On Thursday morning, January 20, Dr. Hoffer gave an illustrated talk to the Corn Section of the Association. The results of experiments conducted by Mr. G. M. Smith during 1920 were discussed. These experiments were on the control of seed infection by field selection, proper curing, and the testing of various sweet corn seed stocks throughout the corn belt.

Dr. Hoffer discussed the corn-rot investigations at a meeting of the scientific staff of the Office of Cereal Investigations in Washington on January 22.

Miss Nellie M. Kellar of Portland, Oreg., has been appointed stenographer and typewriter to fill the vacancy caused by the resignation of Miss Marie L. Teagle.

Miss Lucille Reinbach was appointed clerk-translator, effective January 20, to assist Dr. Harlan in his physiologic investigations of the development of the barley plant. Miss Reinbach has been employed in the Internal Revenue Bureau during the past year and a half.

Miss Jessie P. Rose, assistant pathologist in stripe rust investigations in cooperation with the Oregon Agricultural Experiment Station, resigned, effective January 31, to take up graduate study at the University of Wisconsin.

Dr. Wm. H. Weston, Jr., pathologist in charge of investigations of downy mildews of corn, left Washington January 16 for Drainland and other South Carolina points, to investigate a reported outbreak of downy mildew on corn in that vicinity. He returned to Washington January 20.

VISITORS.

Dr. F. P. Bussell, extension specialist in plant breeding at Cornell University, spent the last 10 days of January in Washington, during which time he was a frequent visitor at the Office.

D. N. Lutz, a graduate of Ohio State University, and recently an instructor in farm crops there, was an Office visitor January 21. Mr. Lutz is en route to Pyengyeng, Chosen (Korea), where he will engage in missionary work.

Prof. Kiyomitsu Ryu, professor in the College of Agriculture, Morioka, Japan, was an Office visitor January 24. Professor Ryu will spend several weeks in the United States in the study of American agriculture.

PUBLICATIONS.

Farmers' Bulletin 1141, "Rice Growing in California," by Charles E. Chambliss, was issued January 21.

The paper entitled "Injury to Seed Wheat Resulting From Treating after Disinfection with Formaldehyde, by Dr. Annie May Hurd, was published in the Journal of Agricultural Research, vol. 20, no. 3, p. 209-244, figs. 1-5, pl. 36-41, issued November 1, 1920. This issue, as previously noted, was delayed in publication and did not appear until January.

A manuscript entitled "Two Sclerotium Diseases of Rice," by W. H. Tisdale, was submitted January 17 for publication in the Journal of Agricultural Research.

A manuscript entitled "Straighthead of Rice and Its Control," by W. H. Tisdale and J. Mitchell Jenkins, was submitted January 17 for publication as a Farmers' Bulletin.

RESPONSIBILITY FOR GOVERNMENT PROPERTY.

The Property Regulations of the Department demand that each employee intrusted with property shall be required to receipt and from time to time to account therefor, and further state that an employee may be relieved of responsibility for an article of Government property (1) by delivery of the article; (2) by transfer of the article when properly authorized to another employee; (3) by approval by the proper official of his statement of loss, theft, destruction, etc.

Pursuant to the instructions referred to above, the attention of employees and cooperators of this Office intrusted with Government property is called to the following brief instructions.

(1) The theft or loss of articles of Government property must be reported to this Office as soon as possible, with a brief statement of the circumstances attending the loss and of the efforts made to recover the property.

(2) When a piece of Government property is unfit for use because of wear or damage the fact must be reported to this Office. If the property is mailable under frank it should accompany the report. If not mailable be cause of size or for other reasons, instructions as to disposition should be gotten from this Office.

(3) This Office needs to be advised of the transfer of Government property from one station to another and from one person to another so that responsibility for it may be properly placed.

(4) Upon termination of the appointment of one charged with responsibility for Government property he must turn over the property as directed by this Office in order that he may be relieved of responsibility therefor.

TRANSLATIONS OF FOREIGN PAPERS ON CEREALS AND CEREAL DISEASES.

Translations of the following papers have been made for the Office of Cereal Investigations by Dr. [illegible]. These are filed in the Library of the Bureau of Plant Industry, [illegible] they may be obtained on request. The original title of the paper [illegible] given, followed by the English translation of the title and the reference to the original place of publication.

Akerman, A. Lagstifning mot berberis-busken (Legislation against the barberry bush) In Sveriges Utsädesför, Tidskr, 26: 232-244. 1916.

---- Kort sammanställning av resultaten av i södra och mellersta sverige under de senaste aren utförda sortforsok med havres. (A comparison in brief of results relative to experiments with varieties of oats, made in southern and central Sweden during the last years.) In Sveriges Utsädesför, Tidskr., 27: 261. 1917.

---- Iakttagelser rörande strefusarios pa vårvete sommaren 1917 (Observations relative to Fusarium culmorum upon spring wheat.) In Sveriges Utsädesför. Tidskr., 28: 82-85. 1918.

---- Svalöf's pansarvete. (The Panzer wheat of Svalöf) In Sveriges Utsädesför. Tidskr. 28, part I. p. 147. 1918.

---- Svalöf's Solvete I & II. (Sunwheat of Svalöf) In Sveriges Utsädesför Tidskr., 28, part I, p. 121. 1918

----, and Johansson. Igenom [illegible] bidrag till kennetnis der kälteresi resistens des winterweizens. (Contributions to the knowledge of the power to resist cold as observed in the winter wheat.) In Zeitschr. f. Pflanzenbau. 5. 349-356. 1917.

Christensen, Harald Frederik Kølpin Ravn. (Frederik Kølpin Ravn, 1873-1920.) Tidsskr. Landøkonomi, 1920: 261-264.

Eriksson, Jakob. Nya undersökningar rörande svartrostens specialisering, spridning och uppkomst. (New investigations of the specialization, dispersal and origin of the black rust.) In Sweden. Kgl. Lantbr. -Akad. Handlingar. 35: 182-199. 1896 (Meddelanden fran Kgl. Landtbr. -Akad. Exper. No. 40.)

---- Till karakteristik af hvetets brunrost. (Characterization of the brown rust of wheat.) In Sweden. Kgl. Landtbr. -Akad. Handlingar, 36: 137-143. 1897. (Meddelanden fran Kgl. Landtbr. -Akad. Exper. No. 49.)

---- Om groningsförmagans hallbarhet hos vissa rostsvampars vintersporer. (On the duration of the power of germination of the winter spores of certain rust fungi.) In Sweden. Kgl. Landtbr.-Akad. Handlingar, 36:371-388. 1897. (Meddelanden fran Kgl. Landtbr.-Akad. Exper. No. 51.)

---- Uber das vegetative leben der getreiderostpilze. (On the vegetative life of the cereal rusts, "II-III.") Svenska vetenskaps-akad. Handlingar. Bandet 38. n.f. No. 3. 1904.

---- Nya studier öfver sädes- och gräsarternas brunrost. (New studies in the brown-rust of cereals and grasses of other kind (Wild.) In Sweden. Kgl. Landtbr.-Akad. Handlingar 38: 172-206. 1899. (Meddelanden fran Kgl. Landtbr.-Akad. Exper. No. 60)

---- Landtbruksbotanisk berättelse af ar 1902. (Agricultural-botanical report for the year 1902. On the power of different autumnal wheat varieties to resist the winter. (In Sweden. Kgl. Landtbr.-Akad. Handlingar och Tidskrift., 41: 112-130. 1902.

---- Landt-bruks-botanisk berattelse af ar 1904. (Agricultural-botanical report of 1904.) Kgl. Landtbr. Akad. Handl. och Tidskr., 43: 233-252. 1904.

---- Om sot i korn och i hafre. (About smut in barley and oats.) In Kgl. Landtbr. Akad. Handl. och Tidskr., 47: 280-285. 1908.

---- Det primära utbrottet av bladmogel (Phytophthora infestans) pä potatis plantan. (The primary outbreak of Phytophthora infestans upon the potato plant.) In Kgl. Landtbr. Akad. Handl. och Tidskr., 55: 538-590. 1916.

----, and Henning, Ernst. Nagra hufvudresultat af en ny undersokning af sadesrosten. (Some main results of a new investigation of the cereal rusts.) In Sweden. Kgl. Landtbr.-Akad. Handl. och Tidskrift., 33: 161-77. 1894. (Meddelanden fran Kgl. Landtbr. -Akad. Exper. No. 27.)

Gabotto, L. La peronospora sul riso. (The peronospora, Sclerospora macrospora Sacc upon rice.) In Gior. Risicolt., 5: 292-294. 1915.

Garbowski, L. Sclerospora macrospora Sacc. sur le ble, en Podolie Russie. (Sclerospora macrospora Sacc. upon wheat in Podolia, West Russia.) In Bul. Soc. Mycol. France, 33: 33. 1917.

Heinsen, E. Beobachtungen über den neuen Getreidepilz Rhynchosporium graminicola. (Observations on the new cereal-fungus Rhynchosporium graminicola.) Hamburgische wissenschaftliche Anstalt. Jahrbuch, Beiheft. 3. (No.) 18: (43-55). 1900.

Henning, E. Nagra ord om olika predisposition for rost a säd. (Remarks upon different predisposition for rust upon cereals.) In Kgl. Landtbr.-Akad. Handl. och. Tidskr., 33: 205-217. 1894.

---- Vara viktigare landtbruks-vaxters disposition for och immunitet gent emet parasitisvampar. (Disposition for and immunity from parasitic fungi in our more important economic plants) In Kgl. Landtbr. Akad. Handl. och. Tidskr., 48: 172-211. 1909.

---- Om Svartrusten (Puccinia graminis). (About the black rust.) In Sveriges Utsäd desför. Tidskr., 24: 140-153. 1914.

---- Om berberis buskens och svartrustens forekomst i Norrland. (On the occurrence of Berberis vulagris and the black rust in Norrland.) In Kgl. Landtbr. Akad. Handl. och. Tidskr., 54 122-135. 1915. Reprinted as Meddel. nr. 107 Centralanst. Förs Jordbr. Bot. Avdeln. 9.

---- Bidrag till kännedomen om Berberis-buskens uppträdande i mellersta och södra Sverige. (Contributions to the knowledge of the occurrence of Berberis vulgaris in central and southern Sweden.) In Kgl. Landtbr. Akad. Handl. och. Tidskr. 54: 730-738. 1915. Reprinted as Meddel nr. 121 Centralanst. Förs. Jordbr. Bot. Avdeln. 10.

---- Om möjligheterna att genomskarp sortering ov utsädet bekämpa sjukdomar hos sadesslagen. (The possibilities to combat diseases in cereals by careful assortment of the seed.) In Kgl. Landtbr. Akad. Handl. och. Tidskr. 55: 282-300. 1916.

---- Huru skall man pa ett enkelt sätt utroto berberisbusken? (How shall we exterminate Berberis in an easy way?) In Kgl. Landtbr. Akad. Handl. o. Tidskr., 56: 458-461. 1917. (Flygbl. nr. 65 centralanst.)

Kiessling, L. Ueber schadliche Nebenwirkungen der Formalin-beizung des Saatgutes auf die Keimung. (On the injurious, secondary effects of formalin treatment upon the germination of the seed.) In Journ. Landw. Bd. 66, Heft 1, p. 7-51. 1918.

Lind, J., and Ravn, Kolpin. Forsög med midler mod byggets stribesyge. (Experiments with fungicides, etc., to combat the "stripe-disease" of barley caused by Pleospora graminea. Diedicke (P. trichostoma Noack.) Tidskr. f. Planteavl, 25: 56-118. 1918.

Malzew, A. Die verbreitung der wichtigsten feldenkräuter in Russland. II. (Distribution in Russia of the most important species of field weeks.) In. Bull. Angew. Bot., 2: 595-664. 1909.

Mortensen, M. L. On sygdomme hos kornarterne, foraarsagede ved fusarium - angreb (fusarioser.) (Cereal diseases caused by Fusarium.) In Tidsskr. Landbr. Planteavl., 18: 177-276. 1911.

Overgaard, P. O. Afskallet Havre. (Hulled oats.) In Tidsskr. for Planteavl., 23: 84. 1916.

Ravn, F. Kølpin. Nogle Helminthosporium arter og de af dem fremkaldte sygdomme ho byg of havre. (Some species of Helminthosporium and the diseases caused by them in barley and oats.) In Bot. Tidssdr., 23: 101-322, 1901.

---- Smittekilder og smitteveje for plantesygdomme. (Sources and roads of infection relative to plant diseases.) In Tidssdr Landbr. Planteavl, 12: 88-107. 1905.

---- Forsøg med Midler mod rugens staengelbrand. (Experiments with remedies against Urocystis occulta.) In Tidsskr. Landbr Planteavl., 19: 214-228. 1912.

---- Om Jorddes infektion. (Infection through the soil.) In Gartner-tidende., 22 (no. 19). 1916.

---- (Original title unknown.) The importance of the various leaf-organs to the grain-development in barley.) In Scand. Naturforsk, 1916.

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FIELD STATION CONDITION AND PROGRESS

MIDDLE PACIFIC STATES (South to North.)

MISSOURI

State Experiment Station, Columbia (L. J. Stadler). The weather in Missouri continued mild during January, with occasional cold spells of short duration. Although there has been very little snow fall during the winter, wheat is in very good condition over the State as a whole.

Experiments with corn extending over sixteen years have been summarized and will be published in two bulletins. The first of these, "Corn Varieties and Their Improvement," is now about to go to press. The second, "Corn Culture," will be published shortly.

In the varietal experiments summarized, Reids Yellow Dent has been found the best variety for uplands in northern Missouri, Commercial White for uplands in southern Missouri, and Boon County White for bottom lands all over the State. Commercial White and St. Charles White have given best results for ensilage.

GREAT PLAINS AREA
(South to North)

WYOMING

Cheyenne Experiment Farm, Cheyenne (A. L. Nelson) (Jan. 17) The temperatures thus far in January have not been excessive. The lowest, -8 degrees, occurred on the 11th. There has been but a trace of precipitation. The wind reached great velocity on the 15th; from 8 until 4 the average rate was 40 miles per hour. Some damage was done to buildings in the vicinity. The wind had no effect on winter wheat seeded on fallow which had been summer tilled with a spring tooth harrow was nil while that which was tilled with a disk was blown considerably. Soil blowing was greater on corn stubble land than on fallow which was summer tilled with a spring tooth harrow. Plats seeded to winter wheat which had been covered with straw and the straw disked in showed the effects of the wind very little.

(Feb. 1) Weather conditions for the past sixteen days have been very favorable for crops. From the 16th to the 23rd the weather was exceptionally mild. On the 23rd and 24th a heavy snow of 20 inches occurred. The precipitation amounted to 0.95 inch. The wind was rather high on the 25th, but no excessive driftingoccurred. Most of the snow laid where it fell and is of considerable advantage to winter wheat. At present the snow is about 6 inches deep on the level and is heavily crusted, thus making conditions rather severe for livestock depending on the range. Hay is relatively easy to secure at moderate prices, which relieves the situation to a considerable extent.

On the 23rd a number of the members of the State Legislature visited the farm and expressed their approval of the work being done. They received samples of grain which they desired to test in their respective sections of the State.

NORTH DAKOTA

State Experiment Station, Agricultural College, Fargo (W.E.Brentzell) During the past year 178 different varieties and strains of flax were tested for resistance to wilt. The different varieties were sown in 5 foot rows on soil known to be infested with the wilt-producing fungus. Fusarium lini. The rows were triplicated in different parts of the area.

Forty-one textile and short fiber varieties were included in the lot, 29 of which showed more than 10 percent resistance, with an average of 30 percent. Out of the remaining 137 varieties, which were of the seed flax type, 42 showed more than 10 percent resistance, with an average of 32 percent. More than half of the varieties showed less than 10 percent resistance to wilt.

Selections were made from some of the better yielding and more resistant varieties. It is planned to resow these in 1921.

Dickinson Substation, Dickinson (Ralph W. Smith). The month of January has been unusually mild and calm, the mean temperature being 19.8 degrees, as compared with a normal of 10.9 degrees for the past 30 years. The ground has been bare most of the time and the wind velocity has averaged only 4 miles per hour. The precipitation for the month was 0.22 inch, part of which was rain occurring January 20. The months of November and December were about normal as to temperature, but the absence of wind and snow combined to make this one of the mildest winters ever known in this part of the State, There is about 1 inch of snow on the ground that fell during the past three days, which is as deep as the snow has been this winter. The maximum temperature for the month of January was 58 degrees on January 16 and the minimum, -14 degrees on January 11.

Winter grain is not receiving much protection from the snow but on the other hand the temperatures have not been severe.

Many inquiries are being received regarding seed of Kubanka and other more rust resistant varieties of durum wheat.

MONTANA

Judith Basin Substation, Moccasin, Mont. (Ralph W. May). Winter wheat is in poor condition. The dry weather and hard winds have killed a large portion of it on the Cereal Project and if weather conditions do not improve within thirty days there will not be much left. The wheat in the furrow-drill seedings is in better condition than that in the ordinary drill seedings. The winter wheat nursery, which was sown very late and has not emerged to any extent, has the best chance of any of the wheat on the Cereal Project.

The soil is very dry and fine, especially on fallowed and fall-plowed fields, and the high winds of December and January have caused extensive soil blowing. In many spots the wind has blown the soil from the wheat plants, leaving them exposed and dried. The ridges in the east and west seedings with the furrow drill are still very distinct but in the north and south seedings the ridges are practically leveled. I think the wheat in

the east and west seedings is also in slightly better condition. The greater part of the straw on the straw-mulched plats has blown away, making the rates of straw mulching very irregular.

The commercial field of winter wheat on the Station farm, which was sown very early on late spring breaking is in much better condition but it, too, is beginning to show the effect of the unfavorable weather. The sod has prevented soil blowing to a considerable extent and the moisture has been retained better than in the older soils.

The precipitation during the month of January was only 0.06 inch. The temperature has been very mild.

IDAHO

Aberdeen Substation, Aberdeen (L. C. Aicher). About 400 bushels of a pure-line selection of the Silvermine type of oats will be distributed in the spring of 1921. This selection has been named Idamine and has been given C. I. No. 1834. These oats, with the exception of a small quantity, have been disposed of in lots of 500 pounds or more to farmers in Idaho who agree to sow on alfalfa, potato, or beet land free from wild oats. The grower also agrees to report on his success with the variety and the test will be under the supervision of the county agents. It is hoped that a considerable quantity of seed will be available next year. The fact that this new oat is available gained considerable publicity through statements given out by the University of Idaho and those contained in the annual report to the Chief of the Bureau of Plant Industry. Many requests for seed have been received from all sections of the United States, these requests ranging from 100 pounds up to 2 tons. In the past when small lots of seed have been sent out they have been largely wasted because the quantity was not sufficient to pay the grower to handle the crop with care and make sure that it was thrashed separately from other grain. Even where as much as 100 pounds was sent out much of the seed was lost.

CALIFORNIA

Plant Introduction Station, Chico (V. H. Florell). Fair weather has prevailed during most of the first half of January. The hybrid material sown in the nursery December 17 and 18 has emerged with good stands. The early sown grains are making good progress and are beginning to stool.

Wild oats appear to be especially plentiful this year. The fall sown commercial fields of wheat are generally badly infested. During the past week winter plowing has progressed rapidly and some farmers have sown their grain. Work was interrupted yesterday by a rain which is still falling.

C E R E A L C O U R I E R

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 FEBRUARY 15, 1921 No. 3
Personnel (Feb. 1-15) and Miscellaneous Issue.

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PERSONNEL ITEMS

Dr. Carleton R. Ball delivered an address February 2, before the Rehabilitation School, conducted by the Vocational Education Board at Deleware College, Newark, Del , on "Opportunities in Agronomic Work."

Dr. Carleton R. Ball discussed the work of the Office of Cereal Investigations at the regular weekly meeting of extension specialists of the Office of Extension Work North and West, on February 15.

John W. Baringer, leader of the barberry eradication campaign in Ohio, arrived in Washington February 4, to assist in the preparation of reports and of material for use in the 1921 campaign.

Guy J. Champuis has been appointed field assistant at the Crowley Rice Station, Crowley, La., effective February 7, to supervise the work at the station during the absence of Mr. J. Mitchell Jenkins, Superintendent.

James R. Holbert discussed the investigations of the root, stalk, and ear rots of corn at the annual meeting of the Kansas Crop Improvement Association at Manhattan, Kans., February 10.

J. Mitchell Jenkins, superintendent of the Crowley Rice Station, Crowley, La., arrived in Washington February 9 to consult with crop specialists and prepare a manuscript for a bulletin on rice experiments.

Harris Moak, laborer at the Biggs Rice Field Station, Biggs, Cal., has resigned, effective December 31.

John F. Trost, assistant pathologist in investigations of corn root, stalk, and ear rots in cooperation with the Indiana Agricultural Experiment Station, discussed these investigations at the annual meeting of the Missouri Corn Growers' Association at Columbia, Mo., on January 18.

H. M. Woolman, in charge of cooperative investigations with cereal smuts at the Oregon Agricultural Experiment Station, arrived in Washington February 1, where he will be located for the next several months in the preparation of manuscripts on blunt investigations .

VISITORS.

G. N. Coffey, State Leader of county advisers, College of Agriculture, Urbana, Ill., was an Office visitor on February 2.

Dr. R. W. Thatcher, director of the Minnesota Agricultural Experiment Station, University Farm, St. Paul, Minn., was an Office visitor February 2.

A conference of State Directors of Extension was held in Washington during the week beginning January 31, for the purpose of studying the work of the Department of Agriculture. During the week the extension directors were brought together in groups in the various bureaus, and the outstanding features of the investigations which are now being conducted were outlined to them. Some of the principal lines of work conducted by the Bureau of Plant Industry were shown by means of display charts, specimens of diseased and healthy fruits, cereals, and other plants, and specimens of new varieties . The outstanding features of the work were discussed briefly by specialists. On February 2, the smut investigations, rust investigations, and barberry eradication campaign were outlined by Dr. Humphrey and Dr. Kempton.

PUBLICATIONS.

Galley proof of a manuscript entitled "The Effect of Time of Irrigation on Kernel Development of Barley," by Dr. Harry V. Harlan and Stephen Anthony, was read February 4. This paper is scheduled for the April 1 issue of the Journal of Agricultural Research.

MEETING OF GENETICISTS INTERESTED IN AGRICULTURE.

The following report of a meeting of geneticists interested in agriculture has been received from Dr. Leon J. Cole, secretary ad interim. This report will doubtless be of interest to the scientific staff of the Office of Cereal Investigations.

In conjunction with the meetings of the American Association for the Advancement of Science and affiliated societies in Chicago an informal gathering of instructors and investigators of genetics related to agriculture was held December 28 at the University of Chicago. Some 35 representatives from fifteen agricultural colleges and experiment stations the United States Department of Agriculture, and other institutions were present. Unfortunately the impossibility of getting the final notices out until very late prevented a number of others from attending. The purpose of the meeting was to discuss such topics of mutual interest at this time as departmental organization, the place of genetics in the curriculum in agricultural colleges, and cooperation in genetic investigations.

In order to open the subject and start the discussion the above topics were assigned in advance by Prof. L. J. Cole of Wisconsin, who was largely instrumental in bringing about the meeting. In the carrying out of this plan Prof. J. A. Detlefsen, Illinois, and R. A. Emerson, Cornell, spoke on organization. In their talks and the discussion which followed it was shown that in many institutions the instruction and research in genetics are scattered about in many different departments with no one person or department responsible for a fundamental course in genetics. In other institutions some genetics is taught in all departments with the emphasis laid in some one department, while in other institutions a separate department of genetics has been established which assumes all responsibility for genetics although other departments may give some special courses and carry on particular lines of research work. All were agreed that a fundamental, general course of genetics should be required before taking up any applied courses in breeding, but in what department that course should be given is a secondary matter to be determined by existing conditions. Many thought it to be desirable for the teaching staff to keep in touch with applied problems of genetics by carrying on investigations of a practical nature although it would be unwise to limit either the theoretical or applied research to a single department of genetics as the outcome of such experiments depends so largely on familiarity with the material worked with and individual interest in particular problems.

In order to bring the general conclusions to the attention of the authorities of the agricultural colleges and experiment stations a committee was appointed to draw up a statement which would embody in a general way the concensus of opinion of this meeting in regard to the matter of departmental organizations. The following resolution was prepared and adopted:

"As far as consistent with present organization in agricultural colleges a single department of genetics, prepared to handle the elementary and advanced courses of general genetics and to direct the investigational work on the basic principles of genetics, has certain practical advantages in that such an arrangement (1) simplifies administration and prevents unnecessary duplication; (2) identifies and gives standing to the subject of genetics in the curriculum; and (3) unifies instruction and research. Such a department should not attempt to control all the investigational work in specialized subjects on either the applied or theoretical problems of genetics but would be able to cooperate in every way possible to advance the outcome of such investigations."

The place of genetics in the agricultural curriculum was discussed by Prof. E. B. Babcock, California, and S. A. Beach, Iowa. In their presentations and in the discussion which followed it was stated that it is theoretically desirable that a general course of genetics should be required of all students of agriculture but that in practice it is not always possible to do this. Most institutions require genetics of students taking certain courses, particularly those concerned directly with plant and animal production. In other institutions genetics is optional with the student or decision is left to the student advisers. Laboratory work is not always required except of those students who intend to specialize in genetics. A general course in genetics should come as early in the curriculum as possible, usually in the second or third year, and should follow an elementary course in biology or its equivalent and precede any of the courses in applied genetics.

This would seem to be selfevident but as now practiced this is not always the case. There should, furthermore, be only one such elementary course, in whatever department given, which should treat of the general principles and lay the foundation for further application to special subjects.

The subject of cooperation in genetic investigation was discussed by Prof. M. J. Dorsey, Minnesota, who emphasized the close relationship of genetic investigations on applied problems with other sciences, cooperation being particularly necessary to secure the greatest results. All who entered the discussion of this topic thought that cooperation should not go so far as to attempt to direct another's research and that the success of any cooperation of this kind is limited by the mutual confidence of the workers.

At the close of the meeting it was agreed that no permanent organization should be formed but that informal meetings such as this should be arranged for whenever desirable. Prof. L. J. Cole, who was elected chairman of the meeting, was voted to act as secretary ad interim.

The gathering having been notified that the cattle breeding experiment started at the Maine Experiment Station was in danger of being discontinued by the action of the trustees of that institution, it was voted that the Resolutions Committee draw up a statement giving the opinion of those present in regard to this matter. Resolutions were prepared and adopted, and copies ordered sent to the trustees of the Maine Agricultural Experiment Station and to the directors of each of the State stations.

PROGRESS OF THE BARBERRY ERADICATION CAMPAIGN.

F. E. Kempton, Pathologist in charge.

The barberry eradication campaign has been pressed vigorously in the eradication area. It has proved to be a more extensive piece of work than was anticipated. Results obtained in the early part of the campaign seemed to indicate that the greater portion of common barberries were in towns and cities . The evidence obtained in the second year of the campaign disproved this conclusion. Accordingly plans were made for a systematic farm-to-farm survey. It is now obvious that the farm-to-farm survey must be continued until all important grain growing areas in which barberries are found to become infected with black stem rust are freed of this pest.

From the beginning of the campaign to December 31, 1919, the original survey of nearly all cities and towns, except Chicago, Cincinnati, Milwaukee and villages of less than 300 population either not accessible by railroads or in less densely populated parts of the States, was completed. In this survey, 1,299,461 bushes were located on 35,878 city properties. Nearby farms and those accessible from main highways traversed were surveyed also. The survey of all main ranches and all farms of the irrigated districts of Montana was completed. A preliminary farm-to-farm survey of a few counties or parts of counties in each State was made. The entire rural area covered was equivalent to 95 counties. A total of 1,933,841 barberry bushes were found on 5,776 farms showing that more barberries were to be found on farms than on city properties. Of this number 1,758,244 bushes were escaped from

cultivation on 1,425 farms, and the remaining 175,597 bushes were under cultivation on 4,351 farmsteads. The above figures located total 3,235,302 bushes on 41,654 properties in this period. Of this total number 2,968,910 bushes have been removed from 31,455 properties. A resurvey of all properties found to have barberry bushes proved to be necessary as bushes were not always readily removed or were improperly dug by the property owners. Sprouts and seedlings often appeared. During this period 144,178 bushes and 5,886 sprouts were removed from 1,780 properties in resurvey work.

In the period from January 1 to December 31, 1920, efforts were concentrated upon the farm-to-farm survey. Every rural property and all properties not already surveyed in cities and villages included in counties covered were surveyed in an area equivalent to 88 counties. The result of this farm-to-farm survey was that during the year 1,492,826 barberry bushes were found on 1,672 farms, 57,439 bushes being located on 1,292 farmsteads while 1,435,387 bushes were escaped from cultivation on 380 farms. These escapes had grown from seeds which had been scattered by birds and by farm animals that feed on the berries. They were found along fence row, stream banks, in woodlands, orchards, windbreaks, old stone quarries, and on rocky cliffs. These areas of escaped bushes varied from one small seedling in the State of Wyoming to 1,335,000 bushes in one county in Wisconsin. In cities and villages, 13,104 bushes were found on 1,254 properties. In the original survey 1,505,930 bushes have been located on 2,926 properties and 453,387 bushes were removed from 2,990 properties. In resurvey 72,684 bushes which had not been removed by the property owners were found remaining on 2,602 properties and 56,303 bushes and 14,148 sprouts were removed from 2,478 properties. During the years total of 1,505,930 bushes were found on 2,926 properties and 509,690 bushes were removed from 5,477 properties.

During the entire campaign from April 1, 1918 to December 31, 1920, 1,312,565 bushes have been found on 37,132 city properties; 3,426,667 bushes on 7,448 farms; 235,036 bushes were on 5,643 farmsteads and 3,193,631 bushes were escaped from cultivation on 1,805 farms. In the farm-to-farm survey an area equivalent to 183 counties has been completed. This includes all the rural territory necessary to survey in Montana and in the western part of Colorado. A total of 4,739,232 bushes have been located on 44,580 properties: 3,478,508 bushes have been removed from 36,934 properties. Of the 1,360,724 bushes remaining on 7,666 properties, 1,000,000 are bushes under 18 inches in height on one farm in southern Wisconsin. Many of the others remaining are in areas of escaped bushes or in large hedges too extensive to be eradicated immediately. While State laws in all States except Wyoming require the property owners to remove them, time must be given to allow the task to be accomplished.

Summary of State totals of properties on which barberries were located, with number of cultivated and wild bushes and sprouts found and total number removed from the beginning of the campaign to December 31, 1920.

NUMBER OF PROPERTIES.

State	In Towns	In country Total	In country Wild	Town and Country Found	Town and Country Removed
Colorado	1,469	44	10	1,513	1,508
Illinois	6,440	316	193	6,756	6,278
Indiana	3,081	353	19	3,434	3,409
Iowa	6,466	816	172	7,282	5,797
Michigan	3,586	3,369	843	6,955	4,912
Minnesota	2,722	790	182	3,512	3,487
Montana	152	43	1	195	194
Nebraska	2,935	103	3	3,038	1,451
North Dakota	423	90	0	513	513
Ohio	3,686	326	41	4,012	2,622
South Dakota	372	144	31	516	464
Wisconsin	5,730	1,047	309	6,777	6,275
Wyoming	70	7	1	77	24
Totals	37,132	7,448	1,805	44,580	36,934

NUMBER OF BUSHES.

State	In Towns	In Country Total	In Country Wild	Sprouting	Totals Found	Totals Removed
Colorado	19,882	1,760	1,397	1,195	21,642	21,245
Illinois	74,665	9,086	2,201	661	83,751	78,867
Indiana	75,025	10,134	2,441	1,852	85,159	83,918
Iowa	142,491	82,045	29,273	2,883	224,536	174,476
Michigan	35,951	103,696	58,743	187	139,647	92,276
Minnesota	588,104	145,431	50,868	7,241	733,535	733,065
Montana	6,577	2,105	1	4,515	8,682	8,671
Nebraska	71,000	6,057	801	1,325	77,057	61,240
North Dakota	3,732	1,110	30	215	4,892	4,892
Ohio	193,760	20,102	15,209	0	213,862	173,892
South Dakota	21,924	14,262	8,344	913	36,186	30,519
Wisconsin	75,472	3,030,711	3,024,352	8,284	3,106,183	2,013,955
Wyoming	3,932	168	1	190	4,100	492
Totals	1,312,565	3,426,667	3,193,631	29,461	4,739,232	3,478,503

FIELD STATION CONDITION AND PROGRESS

HUMID EASTERN STATES (South to North)

NEW YORK

Cornell University Experiment Station, Ithaca (H. H. Love). (Feb. 7). The weather during the winter has been rather open, with very little snow and considerable freezing and thawing. From an inspection of the nursery it is apparent that a number of the less hardy strains are suffering considerably from winter injury. We sowed a large number of selections from hybrids of various sorts, and this winter injury will aid in weeding them, this reducing later studies of them.

The oat yields have all been computed and again our selection known as 110-36 is outstanding as our best yielding oat. This oat is gray in color which is the main objection to it. Recognizing that this was a good oat a few years ago we crossed it with some of our good yielding white strains and a second generation of these crosses was grown last summer. The seed from the second generation plants is now being examined and a large planting will be made of the white, yellow, and intermediate colored types. We are hoping that we have gotten a white or yellow strain which at the same time will be as good a yielder as the 110-36.

The barley yields have been computed and again the hybrids Hanna x Champion of Vermont and Manchury x Champion of Vermont stand out as high yielders. A fair amount of seed of the Manchury x Champion of Vermont will be grown in Cayuga County this year and arrangements have been made with one of our seed firms to take over some more of this strain for multiplication and dissemination. In doing this the right to agree upon a fair price is reserved to the Department.

The hybrids which were sown in the greenhouse have been making excellent growth, especially as we have had more sunlight this winter than usual. In addition to the hybrids a considerable amount of material is being grown for the cytological investigations which are being made by Mr. Ernest Dorsey.

Material is now being prepared for an exhibit for our Farmers' Week which comes February 14 to 19. In addition to the exhibit, the following lectures covering the cereal work are to be given:-

The Best Variety of Oats for New York - a Discussion of Eight Years of Work in Oat Selection.

Breeding Better Strains of Wheat and Barley for New York.

MISSOURI

State Experiment Station, Columbia (L. J. Stadler). The weather in Missouri during the first half of February continued extremely mild. The condition of winter wheat continues to be very good.

Prof. Masao So of Tolyo Imperial University visited the Department of Field Crops on February 4. Professor So is especially interested in genetics and expects to do graduate work in the University of Chicago this year.

Prof. M. J. Funchess of the Alabama Polytechnic Institute visited the Departments of Field Crops and Soils on February 8 and 9.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul. (Olaf S. Aamodt). In a recent letter Mr. Aamodt writes that the cooperative projects on breeding for rust resistance and winter hardiness of wheats are progressing very satisfactorily.

> "Certain hybrids grown in the rust nursery last summer under a heavy epidemic of rust proved to be exceedingly resistant. Selections of these hybrids made on the basis of seed character appear to be as good as Marquis. Intensive studies of the reaction of these hybrids to various biologic forms and other inheritance studies are being carried on in the greenhouse this winter. Two new and interesting facts in the inheritance of rust resistance have been brought to light during the past few weeks: first, that the progeny of a cross between two common wheats segregated with resistance dominant to susceptibility; second, that this segregation may be explained on a single factor basis. There were no intermediate stages in infection. The progeny were either completely immune or completely susceptible."

GREAT PLAINS AREA
(South to North)

WYOMING

Cheyenne Experiment Station, Cheyenne (A. L. Nelson). The snow that fell the last of January covered the ground until February 13. The minimum temperature was 7 degrees on February 7 and the maximum was 54 degrees on February 13. There has been but 0.07 inch of precipitation. The last three days have been marked by warm winds which melted the snow. Because of its general distribution, the melting snow has greatly aided in restoring soil moisture. This in turn will check soil blowing and it is hoped will greatly benefit winter wheat.

MONTANA

Judith Basin Substation, Moccasin, Mont. (Ralph W. May). There has been very little change in the condition of winter wheat on the Station farm since the last report. Farmers of this vicinity report that winter wheat sown in stubble is in good condition. However, a large part of the wheat sown in stubble was sown late and has not emerged, but the plants are alive and thrifty. Late-sown wheat on fallow or fall-plowed ground is in the same condition.

We have had only a trace of precipitation during the first fifteen days of February and only .06 inch since the first of the year. Temperatures have been unusually mild during the first half of February but on February 15 there was a sudden drop in temperature and we are now having zero weather.

A few farmers sowed spring wheat during the unusually mild weather early in February, thinking that the seed will not germinate until early spring. As an experiment I sowed three 8 rod rows each of winter and spring wheat on February 14 alongside the winter wheat nursery. The winter and spring wheats

were sown in alternate rows and the seed of half of the rows was treated with formaldehyde while the seed of the other rows was not treated. The winter wheat will surely have a better chance than the spring wheat, considering the weather we are likely to have before spring opens.

Prof. P. V. Cardon, agronomist at the Montana Agricultural Experiment Station, visited here on February 11 and 12.

C E R E A L C O U R I E R

Official Messenger of the Office of Cereal Investigations
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 FEBRUARY 28, 1921. No. 4
Personnel (Feb. 16-28) and Field Station Issue.

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PERSONNEL ITEMS

Dr. F. D. Fromme, plant pathologist at the Virginia Polytechnic Institute, completed the compilation of the cereal disease survey data for 1920 which he has been preparing in cooperation with the Office of Plant Disease Survey, and returned to Blacksburg, Va., February 19.

Mrs. Rose P. Gamble, botanical artist, who left Washington December 9, 1920 for a visit with her family in England, returned to the Office February 28.

Dr. A. G. Johnson, pathologist in charge of investigations of imperfect and sac fungi, with headquarters at Madison, Wis., arrived in Washington February 27, for consultation regarding cereal disease investigations and the preparation of manuscripts for publication.

Prof. L. E. Melchers, plant pathologist at the Kansas Agricultural Experiment Station and agent in cooperative investigations of cereal smuts, arrived in Washington March 1, to consult with regard to cereal disease investigations and prepare manuscripts on studies of sorghum and other smuts.

Miss Burnetta Rose has been appointed stenographer and typewriter, effective March 1, to assist in the barberry eradication campaign in Nebraska, with headquarters at Lincoln. She succeeds Miss Clara B. Snyder, whose temporary part-time appointment was terminated February 15.

PUBLICATIONS.

J. Allen Clark has an article entitled "Durum Wheat in the United States," in the New Macaroni Journal, vol. 2, no 10, p. 20, 22, February 15, 1921.

A paper entitled "Frederick Kølpin Ravn," by Dr. H. H. Whetzel and Dr. H. B. Humphrey, appeared in Phytopathology, vol. 11, no. 1, p. 1-5, January, 1921.

Galley proof of the paper entitled "Seed-Coat Injury and Viability of Seeds of Wheat and Barley as Factors in Susceptibility to Molds and Fungicides," by Dr. Annie May Hurd, was read February 28. This is scheduled for the April 15 issue of the Journal of Agricultural Research.

Abstracts of papers contributed by cereal disease workers of the Office, presented at the twelfth annual meeting (Dec. 27-31, 1920) of the American Phytopathological Society at Chicago, Ill,, were printed in Phytopathology, vol, 11, no 1, January, 1921. The titles of these papers were included on pages 401 and 402 of the December 31 issue of the CEREAL COURIER.

APPROPRIATIONS FOR THE DEPARTMENT OF AGRICULTURE FOR 1922.

The Appropriation Act for the Department of Agriculture for the fiscal year ending June 20, 1922 is, in the main, very similar to that for the fiscal year 1921. It carries increases in some items and the total amount appropriated is a considerable increase over that now authorized. Most of the increase, however, lies in a special appropriation of $2,000,000 for loans to farmers in the drouth-stricken districts for the purchase of seed wheat, oats, barley and flax, and in a provision for the purchase of forest lands for the protection of watersheds. A new item provides for a director of scientific work and a director of regulation, these to be permanent officials in the Secretary's office at salaries of $5,000 a year.

There is no material change in the appropriation for the Office of Cereal Investigations. A proviso has been added to the cereal investigations item to the effect that not to exceed $20,000 is to be expended for investigations of wheat scab, and the total amount for the office has been increased by that amount. On the other hand, the present $50,000 provision for cereal disease control which is administered jointly by the Office of Cereal Investigations and the Office of Plant Disease Survey has been reduced to $30,000.

Final agreement on the bill was reached in Congress on March 1, and the Act was approved March 3.

NEW OAT VARIETIES IN NEW YORK.

Four new oat varieties produced in the cooperative oat-breeding experiments at the Cornell University Agricultural Experiment Station were named during Farmers' Week at Cornell University, February 21-26. These were previously distributed to a limited extent to farmers under Cornell University numbers, and some of them are already quite popular. The varieties are as follows:

Comewell, a selection from the Welcome oat originally made by J. B. Norton about 1903, has grown at Cornell University since 1908. This was first distributed to farmers under Plant Breeding No. 123-5 in 1912. In a recent letter Dr. Love states that Comewell is in great demand in the counties along the Hudson River, as comparative trials have shown that it is the best oat. The Farm Bureau Manager of Dutchess County last week ordered 1,100 bushels from one of our growers."

Standwell, a selection from the Lincoln oat developed from a single plant selected in 1912 and known previously as Selection No. 109-15. In 1920, three farmers reported yields of 90, 77, and 75 bushels to the acre, respectively. Regarding this oat Dr. Love says:

> "The Standwell seems to have a stiffer straw than the Comewell and gave some splendid results this last year. While we have distributed this oat to a number of growers in the last three years there are only two farms which are now putting out seed. The same is true of the Empire. We expect, however, that seed of these will be multiplied, and that there will be more of the Empire and Standwell grown, particularly through central and New York in the near future."

Cornellian, a selection from Canada Cluster, formerly known as No. 110-36. This was developed from a plant selected in 1912 and has been a very high yielder at Cornell University. There is some objection to it because of the gray color of the kernels, and it is not popular with farmers who grow for feeding. In the classification nursery at Aberdeen, Idaho, the Cornellian appeared to be very similar to the oat variety known as White Queen. At Cornell University it has been crossed with some of the better white oats, and the third generation of this cross will be grown in 1921. It is hoped that high-yielding, white-kerneled varieties may be produced. The Cornellian is in considerable demand in Lewis County, N. Y., as it has yielded especially well there.

Empire, a selection from Big Four, formerly known as No. 115-40, was developed from a single plant selected in 1912. Like the Standwell, it has been distributed to a number of growers in the last three years, but only two farmers now have seed for sale. This oat is a promising one for central New York.

FIELD STATION CONDITION AND PROGRESS.

HUMID EASTERN STATES (South to North)

NEW YORK

Cornell University Experiment Station, Ithaca (H. H. Love). During the month of February, very successful Farmers' Week meetings were held. The members of the Department of Plant Breeding gave several lectures and the department had an exhibit which included their improved strains of the cereal crops. Considerable interest was manifested along all lines and a considerable demand was made for the improved strains of small grains. The department is now filling these demands so far as possible and is making arrangements so that most of the seed sent out will be utilized for seed purposes until there fairly large quantities of the different strains are available.

During the month notes have been taken upon the large number of hybrids which were made purely for practical purposes and material of these various hybrids has been gotten ready for spring sowing.

The records of the pure-line selection experiment with oats and the cooperative experiment with the Montana Agricultural Experiment Station were completed during the month of February. Some phase of the pure-line experiment will be continued but the cooperative experiment, having now run for eight years, will be discontinued.

The material which has been sown in the greenhouse has made a very rapid growth during the month, due to favorable sunlight, and hybridization work will be begun within a short time.

The weather during February has been mild. We have had no temperatures below zero and comparatively little snow. It is too early to know in just what condition the wheat has come thru the winter but this can be told within a very short time.

MISSOURI

State Experiment Station, Columbia (L. J. Stadler). During the latter half of February we have been having spring weather in Missouri and oats have been sown in many fields in the central part of the State. We are expecting to sow oats and other spring grains on the Station field early in March . We expect to sow about 3,500 rod rows and more than a thousand head rows in addition to our regular varietal experiments in larger plats.

Two bulletins summarizing wheat investigations during the past fifteen years are now being prepared. Varietal and cultural experiments conducted on the Station field and on several outlying experiment fields will be reported in these bulletins.

GREAT PLAINS AREA
(South to North)

KANSAS

Hays Branch Experiment Station (A. F. Swanson). Under date of Feb. 18, Mr. Swanson writes from Manhattan: Last Tuesday evening I received a long distance call from Mr. Kent stating that some of the plats were in danger from soil blowing. I spent two days at Hays and I believe the situation is quite well controlled for the time being. It was necessary to throw up some lister furrows and to use a 3-shovel cultivator in a uniform wheat field surrounding the experimental plats. In the date-and-rate-of-seeding experiment, wheat seeded after October 15 is completely blown out. The other experimental plats suffered little injury. Two of the station fields were severely injured. There is considerable danger from soil blowing because of an open winter and a number of farmers have already suffered damage.

COLORADO

Akron Experiment Farm, Akron (F. A. Coffman). (Feb.24) A very mild winter has been experienced, so far, at Akron. The damage done to the wheat by the wind storms of some ten days ago was not very great here. Considerable moisture fell during the winter and wheat prospects are possibly brighter than when I left here in November. The weather has been so warm during the past few days that some farmers have started to do spring plowing. No field work has as yet been done on Akron Field Station.

Before leaving Manhattan, the descriptions of some 1,500 Burt oats plants were furnished. A total of some 40,000 seeds were described. The data taken have not as yet been fully tabulated. Data could have been taken on nearly twice as many plants as were examined but we believed that the number of plants examined was large enough and that the results we would obtain from additional plants would not justify the time it would take to describe them. Professor Parker expects to sow seed of the most promising plants grown at Manhattan, and I have brought those grown at Akron last year home with me and expect to select the most likely for further growing. We feel that there is a possibility of developing some valuable new oat varieties from this selection work, and we are looking forward with interest to the results of this year's experiments. Out plan is to carry on the work at at Akron and Manhattan as one project.

WYOMING

Cheyenne Experiment Farm, Cheyenne (A.L.Nelson) The past tow weeks have been very mild and pleasant. The lowest temperature, 4 degrees, occurred February 17, and the highest, 58 degrees, occurred February 25. No precipitation fell during this period and the total for the month is 0.07 inch. The wind velocity has been rather high but due to the wetness of the soil little soil blowing has taken place. Thus the winter wheat is in good condition. That which was seeded late is germinating and emerging. Grazing conditions are very good.

NORTH DAKOTA

Dickinson Substation, Dickinson (Ralph W. Smith) February has added another month of mild weather to an unusually mild winter. The ground is bare from Dickinson to Fargo, and in fact over much of the State except the northeastern part. Some field work has been done in the vicinity of Dickinson.

At the annual conference of station and extension workers held at the Agricultural College, Feb. 26 to March 21, the County agent section voted to push the introduction and distribution of rust-resistant wheat as one of the six major projects for the State for the present year. Considerable interest was shown in the discussion of wheat varieties and reports indicate that many counties have profited during the past year by the relative increase in the acreage of Kubanka and other durum varieties.

Dr. H. L. Walster, agronomist at the State experiment station, reported to the Conference the results of varietal experiments with spring wheat at the various stations in the State, showing the relative value of the principal varieties as regards yield, rust susceptibility, and milling and baking qualities. Much interest was shown in the subject and many questions were asked. The indications are that the relative acreage of durum wheat in the State will be considerably increased this year.

MONTANA

Judith Basin Substation, Moccasin, Mont. (Ralph W. May). Only a trace of precipitation fell during the month of February. Small flurries of snow fell on each of six days during the month, but the amount that fell each day was not measurable. However, the small amount of moisture from the snow, together with unusually mild weather during the month, have caused some of the wheat to show a little more life. Some of the wheat cannot possible be revived, but just how extensive the damage is can not yet be determined.

The wheat in the nursery which was sown on October 1 and 2 is just beginning to emerge. The few fields of wheat on neighboring farms that I have been able to see, regardless of whether the wheat was sown in stubble or fallow, are in about the same condition as our wheat nursery. The acreage of fall sown wheat around here is small and most of it was sown late. The soil has been so dry all winter that the late-sown wheat germinated and then lay dormant beneath the surface.

The following table shows the number of lots and varieties of winter wheat, spring wheat, oats, barley and flax that have been grown in each the single and replicated fiftieth acre plats and discarded therefrom since the Judith Basin Substation was established in 1908.

Number of Lots and Varieties Grown and Discarded.

Replicated plats	Winter wheat*	Spring wheat.	Oats.	Barley.	Flax.	Total.
Replicated plats	33	31	20	12	30	126
Single plats	59	17	15	22	25	138
Total	92	48	35	34	55	264

* Varieties of winter wheat discarded in 1916 and 1917 when the records are not complete on account of winter-killing.

The number of varieties, selections, and hybrids of the five crops grown in nursery rows since 1908 will exceed 600.

CALIFORNIA

Plant Introduction Station, Chico (V. H. Florell) Small grains generally are in excellent conditions. Early-sown cereal varieties having the spring habit of growth are beginning to shoot. So far as can be determined, Rhynchosporium of barley is evident in all susceptible varieties. In a few varieties infection is quite heavy and is accompanied by yellowing of the leaves.

With a possible few exceptions where special conditions obtain, ranchers have completed the sowing of wheat, but are still sowing some barley. The acreage of these crops will be considerably reduced this year on account of the wet winter.

Dr. L. Waterhouse of Australia visited the Station on January 29.

C E R E A L C O U R I E R

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 March 15, 1921 No. 5
Personnel (Mar. 1-15) and Field Station Issue

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PERSONNEL ITEMS

Prof. Wallace Butler, who has served as part time Field Assistant during the past three months in connection with our black stem rust investigations, has had his appointment extended for an additional period of three months.

Nathanial R. Carmichael has been appointed Field Assistant in the barberry eradication campaign for duty in Iowa, beginning April 1, 1921.

Warren N. Christopher has been appointed Field Assistant, effective March 9, 1921, to assist with the black stem rust investigations, with headquarters at St. Paul, Minn.

Stewart R. Cooper, who assisted in the barberry eradication campaign during the past two summers, has been appointed Field Assistant, effective April 1, for duty in the barberry eradication campaign in Iowa.

Gordon C. Curran has been appointed, effective April 1, 1921, Field Assistant in black stem rust investigations, with headquarters at St. Paul, Minn. During the summers of 1919 and 1920 Mr. Curran assisted with the barberry eradication campaign in Minnesota.

Benjamin F. Dittus has been appointed Field Assistant, effective April 1, 1921, to assist in the barberry eradication campaign in Nebraska.

Prof. L. E. Melchers, agent in charge of cooperative investigations of cereal smuts at Manhattan, Kansas, who arrived in Washington March 1 for consultation and the preparation of manuscripts, left for Manhattan on March 14. During his visit here, Prof. Melchers made a short trip to New York City to confer with Dr. George M. Reed, formerly pathologist in charge of our cereal smut investigations, regarding their joint manuscript on cereal smuts. On March 10 Prof. Melchers gave an illustrated lecture before the Phytopathological Seminar of the Bureau of Plant Industry, bearing upon his investigations of the leaf and stem rusts of wheat.

Marion T. Meyers has been appointed Field Assistant, effective April 1, for duty in Ohio in the barberry eradication campaign.

M. N. Pope, assistant in barley investigations, left Washington on March 5 for Tifton, Ga., where he will make genetic and physiological investigations on barley.

Ernest R. Schulz has been appointed Field Assistant in the barberry eradication campaign, effective April 1, 1921, for duty in Illinois or Wisconsin.

Dr. E. C. Stakman, pathologist in charge of stem rust investigations, with headquarters at St. Paul, Minn., was in Washington March 7-10 in consultation regarding these investigations for the coming season.

C. W. Warburton has been detailed to take charge of the work under the recent act of Congress making immediately available a two-million dollar appropriation for the purpose of making loans to farmers in the drought-stricken areas of the United States, with which to purchase seed grain for spring planting. He left Washington on March 12 and will establish headquarters at Fargo, North Dakota, from which point this work will be handled in that State and in Montana.

VISITORS

M. D. Campbell, who is growing 60,000 acres of wheat on the Crow Indian Reservation in southeastern Montana and 48,000 acres on the Fort Peck Indian Reservation in northeastern Montana, was an office visitor on March 12.

Benton E. Rothgeb, formerly in charge of grain sorghum and broomcorn investigations in this office and now in the Bureau of Markets, visited the office on March 16, in connection with his final manuscript on grain-sorghum experiments.

PUBLICATIONS

A paper entitled "Loss from Rye Ergot," by Edith K. Seymour and Frank T. McFarland, was approved on March 15 for publication in Phytopathology.

Manuscript of "The Improved Rag-Doll Germinator," by B. H. Duddleston and G. N. Hoffer, was submitted on March 10 for publication in the Farmers' Bulletin series.

A research paper entitled "Another Conidial Sclerospora of Philippine Maize," by William H. Weston, Jr., appeared in the Journal of Agricultural Research, vol. 20, No. 9, pp. 669-684, pl. 76-79, fig. 1; Feb. 1, 1921. This is the second in this series.

Clark, J. Allen. "Spring Wheat Varieties for the Dakota Farmer Empire," The Dakota Farmer 41 : 387c - 387d. March 15, 1921.

Erratum

The citation of Meyer's paper, No. 176 on page 113 of Atanasoff's mimeographed paper, entitled "Ergot of Grains and Grasses," should read v. 17, p. 924-930, instead of "v. 47, p. 924," as mimeographed.

FIELD STATION REPORTS

From now on during the season reports are desired from each field station promptly on the 15th and last days of each month. Our ability to get out an interesting courier depends on the cooperation of the field representatives.

FIELD STATION CONDITION AND PROGRESS

HUMID EASTERN STATES (South to North)

MISSOURI

State Experiment Station, Columbia (L. J. Stadler). The mild winter in Missouri has been followed by an early spring and oats seeding over the whole State is well on towards completion. We have just completed the seeding of some 5,000 rod rows and about 1,800 head rows of oats and barley on the Station field. Wheat over the State in general is in excellent condition.

GREAT PLAINS AREA
(South to North)

KANSAS

Hays Branch Experiment Station (A. F. Swanson). The writer has just returned to Hays from Manhattan, Kansas, to begin the field work on the Cereal Project for the coming year.

During the two months which the writer has been stationed at Manhattan, considerable data were worked up concerning the Red amber X Feterita sorghum cross and it is hoped that the work will be completed before the end of the year. This work is being done in cooperation with Professor J. H. Parker of the College.

Soil blowing has been severe in the vicinity of Hays. The dry fall and lack of snow during the winter left the ground in a fine ashy condition. Little damage was done to the cereal plats except in the date-of-seeding experiment after the date of October 7 where all of the wheat was blown out.

Except for being subject to soil blowing, the ground is in excellent shape for barley and oats. Seeding has begun on the station. The cereal project will be seeded about March 21. A seeding of barley and oats was made this year on February 15. Both varieties are up and doing well.

If the weather permits, considerable field work will be done on the Cereal Project during the next ten days. The work will include seeding spring grains, setting out stakes and trimming plats.

COLORADO

Akron Experiment Farm, Akron (F. A. Coffman). Weather conditions have been very mild here during the past two weeks, up until yesterday. The weather is slightly more seasonable today as the ground is covered with snow. Spring field work has been started by many of the farmers and we have begun our spring plowing. Unless we have unfavorable weather we hope to begin our spring seeding about March 20.

WESTERN BASIN AND COAST AREAS
(South to North and West)

OREGON

Sherman County Branch Station, Moro (D. E. Stephens). March 9, 1921 - We have had an unusually mild winter and winter grains are in fine condition. The ground now is about dry enough to plow and we have started our spring work.

CALIFORNIA

Biggs Rice Field Station, Biggs (J. W. Jones). We have had reasonably good weather during the past ten days, and the rice farmers are again getting restless and will probably start to thrash soon. Rice should be quite dry before it is thrashed now, because the weather is getting warmer and any dampness probably will result in damage from heat.

The Sacramento Valley Grain Association, Inc., with which this Department is cooperating in its investigations at the Biggs (Calif.) Rice Experiment Station, has announced to California rice growers that it has for distribution seed of the new variety of rice which has just been named "Caloro".

The announcement states that this new variety, which was developed by E. L. Adams at the Biggs Rice Experiment Station, is the best of several hundred selections made and grown under comparable conditions during the past few years. It has outyielded all of the standard varieties of rice grown in California from 8 to 30 per cent during the past four years. In 1919 it gave an average yield of 7874 pounds per acre, as compared with a yield of 6000 pounds from No. 1600 and 5800 pounds from Early Wataribune, and in 1920 a yield of 6300 pounds per acre as compared with a yield of 4800 pounds from No. 1600. Caloro matures about two weeks earlier than Late Wataribune, four or five days earlier than Early Wataribune, seven days later than No. 1600, and ten days later than Onsen. It is well adapted to both new and old land.

It is the opinion of those who have had the opportunity of watching the results of this new variety that it is superior to Early Wataribune (now generally grown in California) in every respect and that as seed becomes available it will entirely replace the latter. The Association will allocate at this time sufficient seed to plant about 6000 acres.

California Experiment Station, Berkeley (W. W. Mackie). After an exceptionally wet winter in the northern portion of the State, the precipitation for the latter half of February has fallen below normal but without drying north winds. This has permitted many of the unplanted fields to be seeded. The excessively low price of barley ($1.00 to $1.25 per 100 lbs.) has induced many farmers to sow wheat.

Barley scald (Rhynchosporium graminicola) is prevalent in all early or volunteer fields inspected and has made its appearance even in late-sown fields. Barley plants almost dead from the attacks have been observed in spots. Further experiments with resistant varieties and hybrids showing immunity in previous years will be made at Salinas, Davis, El Centro, Fresno and Escondido.

Tennessee Winter barley which is resistant to barley scald is also demonstrating its ability to survive excessive quantities of water in contrast to common, or Coast, barley which has been damaged under the same conditions.

Septoria damage has been noted already in early wheat in the Sacramento Valley.

Recent notes taken in the smut plots at Fresno indicate that copper carbonate and copper sulphate-lime dusts do not injure the seed in any way but on the contrary produce better stands and more advanced growth than non-treated seed. Laboratory examinations of bunted wheat sown in the soil between filter papers showed no germination of bunt spores where the seed was treated with the copper dusts but profuse germination of non-treated bunt spores.

Prof. John W. Gilmore, representing the University of California in the cooperative cereal disease investigations in California, leaves for Chili on March 27 to be absent one year as exchange professor with the University of Chili. Prof. Gilmore will carry with him a large number of cereals which he will sow on his arrival and harvest before his departure. He will, before his return, visit Argentine, Peru, and Bolivia, giving special attention to cereal and forage crops.

PROGRESS OF THE BARBERRY ERADICATION CAMPAIGN

E. E. Kempton, Pathologist in Charge

Very little field work has been done in the barberry eradication campaign during the months of January and February. Publicity has been continued. Circular letters, posters, bulletins, yearbook articles, and samples of barberry have been mailed by the State leaders to county agents, schools, and interested individuals in each State.

Numerous talks have been made before farm bureaus and other agricultural gatherings. In connection with the publicity operations, a lookout has been kept for barberries.

During January, in the original survey, 119 bushes were found on 35 properties. Reports were received and records made of the removal of 6,520 bushes on 233 properties. In the resurvey, 26 bushes were reported removed from 11 properties, and 9 sprouts were found and removed. A number of these bushes had been removed previous to these months, but the reports of their removal had not been reported to the State headquarters.

During February, in the original survey, 73 bushes were found on 16 properties. Reports were received and records made of the removal of 4,658 bushes from 73 properties. In the resurvey, 108 bushes were located on 13 properties. Reports of the removal of 50 bushes from 10 properties and the removal of 12 sprouts were received.

Summary of State totals of properties on which barberries were located, with number of cultivated and wild bushes and sprouts found and total number removed from the beginning of the campaign, April 1, 1918, to February 28, 1921.

State	Number of Properties					Number of Bushes					
	In Town	In Country		Totals		In Town	In Country		Sprouting	Totals	
		Total	Wild	Found	Removed		Total	Wild		Found	Removed
Colorado	1,468	45	10	1,513	1,508	18,565	3,077	1,397	2,596	21,642	21,245
Illinois	6,460	316	193	6,776	6,303	79,665	9,086	2,201	661	88,751	83,944
Indiana	3,081	354	19	3,435	3,411	75,025	10,136	2,441	1,857	85,161	83,923
Iowa	6,666	816	172	7,482	6,890	642,491	82,045	29,273	2,883	724,536	715,207
Michigan	3,623	3,380	843	7,003	4,978	36,098	103,733	58,743	65	139,831	94,509
Minnesota	2,722	791	182	3,513	3,467	588,104	145,434	50,868	10,162	733,538	733,065
Montana	152	43	1	195	194	6,577	2,105	1	4,515	8,682	8,671
Nebraska	2,935	103	3	3,038	1,712	71,000	6,057	801	1,325	77,057	75,460
North Dakota	424	90	0	514	514	3,785	1,110	0	220	4,895	4,895
Ohio	3,686	326	41	4,012	2,758	193,760	20,102	15,209	0	213,862	177,560
South Dakota	372	144	33	516	457	21,924	14,262	9,239	913	36,186	30,105
Wisconsin	5,780	1,047	309	6,827	6,325	275,472	3,030,711	3,024,352	8,284	3,306,183	2,213,955
Wyoming	70	7	1	77	24	3,932	168	1	190	4,100	492
Totals	37,439	7,462	1,807	44,901	38,541	2,016,398	3,428,026	3,194,526	33,641	5,444,424	4,240,832

The above results include, in so far as estimates were furnished, hundreds of thousands of bushes removed from commercial nurseries during the early part of the campaign. The larger numbers were about 600,000 for Minnesota, 500,000 for Iowa, 200,000 for Wisconsin, and 75,000 for Ohio.

C E R E A L C O U R I E R

Official Messenger of the Office of Cereal Investigations
Bureau of Plant Industry, U. S. Dept. of Agriculture
(NOT FOR PUBLICATION)

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Vol. 13 March 31, 1921. No. 6
Personnel (March. 16-31)

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PERSONNEL ITEMS

Robert W. Webb has been appointed Field Assistant, effective June 1, in connection with the wheat scab and take all investigations.

Arthur W. Henry has been appointed Field Assistant on stem rust investigations effective April 1, with headquarters at St. Paul, Minnesota.

Emil H. Ostrom has been appointed Field Assistant in barberry eradication for duty in Minnesota, effective April 1, 1921.

Charles O. Hinkley has been appointed Field Assistant in barberry eradication, effective April 1, and will work in Minnesota.

John F. Holmes has been appointed Field Assistant in barberry eradication, effective May 1, for work in South Dakota.

Lynn D. Hutton has been appointed Field Assistant, effective May 1, 1921, to assist in the barberry eradication campaign in South Dakota.

Dr. Theodore Holm has been appointed Translator, effective April 1, 1921, for three months.

Leo R. Tehon has been appointed Field Assistant in charge of the Barberry Eradication campaign in the State of Illinois, effective April 1.

Guy J. Chapman, who had charge of the Crowley (La.) Rice Station under temporary appointment during Mr. Jenkins' absence in Washington, D. C., resigned on March 15.

Dr. H. B. Humphrey spent March 31 in an inspection of wheat fields in Queen Annes County, Maryland, reported to be infested with take all. No evidence of disease was found.

Hugh Stanchenn left Washington on March 28 for the Peedee Substation at Florence, South Carolina, where he will conduct corn breeding and varietal experiments this summer, in cooperation with the South Carolina Agricultural Station.

C. H. Kyle left Washington on March 27 for Florence, South Carolina to oversee the beginning of the present season's cooperative experiments in corn breeding on the Peedee Substation at that point.

John B. Sieglinger, who has been in Washington since November 28, 1920, preparing his annual report, left for Woodward, Oklahoma, on March 25, visiting the Missouri Experiment Station enroute.

M. N. Pope, who left Washington on March 5 for Tifton, Ga., to make genetic and physiological studies on barley, writes under date of March 17 as follows:

> "My work is advancing finely and I hope to get some valuable data. The barleys we sent down here for trial look find at present and I hope to find a few among them which will be promising enough increase for rod row and plot trials.
>
> The season is advanced here and it is very warm and sunny. Had a good rain last night."

J. C. Bringmade, Jr., left Washington on March 31 for New York, where he will spend a few days annual leave, proceeding from there direct to Mandan, North Dakota, where he is conducting flax breeding experiments.

H. V. Harlan will leave Washington on April 4 for a short trip to Tifton, Ga., for the purpose of making genetic and physiological studies on barley.

PUBLICATIONS

A paper entitled "The Aecial Stage of the Orange Leaf Rust of Wheat, Puccinia triticina", by Drs. H. S. Jackson and E. B. Mains, was submitted on March 18 for publication in the Journal of Agricultural Research. This paper results from the cooperative experiments conducted at the Purdue Agricultural Experiment Station, Lafayette, Indiana.

Purdue University (Ind.) Department of Agricultural Extension Bulletin No. 97, entitled "Testing Seed Corn", by G. N. Hoffer and A. T. Wiancko, was issued in March, 1921. It results from cooperative experiments at the Purdue Agricultural Experiment Station, Lafayette, Indiana.

Page proof of Dr. Annie M. Hurd's paper on "Seed-Coat Injury and Viability of Seeds of Wheat and Barley as Factors in Susceptibility to Molds and Fungicides" was received on March 21.

A manuscript entitled "The Take-All Disease of Wheat and Its Control", by H. B. Humphrey, A. G. Johnson and H. H. McKinney, was submitted on March 31 for publication in the Farmers' Bulletin series. This is designed to supersede Farmers' Bulletin 1163 entitled "Take-All and Flag Smut".

A paper by Dr. E. B. Mains, entitled "The Heteroecism of Puccinia montanensis, P. koeleriae, and P. apocrypta", was approved on March 28 for publication in Mycologia. This paper results in part from cooperative experiments at the Purdue Agricultural Experiment Station, Lafayette, Indiana.

Transcript of the address by Dr. C. R. Ball, entitled "The Value of Research on Grain Crops", delivered before the Missouri Corn Growers' Association, at Columbia, on January 21, has been received and revised, and was transmitted to the Secretary of the Missouri State Board of Agriculture on March 31.

A paper entitled "The Corn Root, Stalk and Ear Rots", by Dr. G. N. Hoffer, was submitted on March 29 for publication in Successful Farming.

A manuscript entitled "Wheat Scab and its Control", by Drs. A. G. Johnson and J. G. Dickson, was submitted on March 28 for publication in the Farmers' Bulletin series. This paper results from investigations conducted in cooperation with the Wisconsin Agricultural Experiment Station, Madison, Wisconsin.

A paper by H. V. Harlan and M. N. Pope, entitled "The Ash Content of the Awn, Rachis, Palea, and Kernel of Barley During Growth and Maturation", was submitted on March 28 for publication in the Journal of Agricultural Research. This is the fourth in the series of physiological papers on the development of barley kernels, the first two having been published in the journal and the third now being in press.

VISITORS.

C. F. Noll, associate agronomist at the Pennsylvania Experiment Station, State College, Pa., was an Office visitor on March 24, while enroute to the Maryland Experiment Station, College Park, Md., to inspect experiments being conducted there.

Prof. L. W. Tarr, of the Department of Chemistry of Deleware State College, visited the Office on March 25 to confer with Dr. Hurd regarding some of the problems which have been confronting him in his hydrogen-ion experiments.

Dr. L. R. Jones, of the University of Wisconsin, was an Office visitor on March 18.

CEREAL COURIER

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 APRIL 9, 1921. No. 7

Field Station (March 16-31) Issue.

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FIELD STATION CONDITION AND PROGRESS

HUMID EASTERN STATES (South to North)

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor). The past winter has been exceedingly mild. The lowest temperature recorded was on Jan. 19 when the thermometer read 11°, while the highest temperature for the same month came on the 22nd when the maximum of 68° was reached.

Weather data for the winter are as follows:

	Max. temp.	Min. temp.	Rainfall (inches)
November	74°	15°	4.14
December	67°	19°	3.58
January	66°	11°	2.85
February	73°	18°	2.13
March 1-23	67°	30°	1.51

The wheat and rye plats in the varietal experiment show no evidence of winter injury, and with few exceptions have a 100 percent stand. These two crops are farther advanced than usual - some of the earlier ryes, as Abruzzes, should head within a week.

Barley suffered some slight injury from heaving and on the higher or more exposed portions of the plats the plants were either killed or severely checked. The Nakano Wase strains which have a typical spring habit of growth present a particularly healthy appearance.

The oat plats are in poorer shape than the other winter cereals. This undoubtedly is due in large part to the unfavorable fall growth they made owing to excessive dry weather shortly after sowing. Aurora and Fulghum, two spring-habit oats which germinate and grow more rapidly in the fall than the typical winter oats grown at Arlington, present the best stands and appearance. Chickweed is abundant in both the oats and barley plats.

GEORGIA

State Experiment Station, Athens and Substations (R.R.Childs). Early varieties of rye, wheat, oats, and barley are beginning to head. Dry weather through March caused a small growth and all grains are short.

Tifton Substation: The early varieties of grain were fully headed on March 26 and showed a good growth. Selected strains of South Georgia and Abruzzes Rye showed a good growth with the South Georgia apparently slightly better. Oats in the date-of-seeding experiment showed a very striking contrast in favor of the early seedings.

NEW YORK

Cornell University Experiment Station, Ithaca (H. E. Love). There is a great demand for the improved strains of barley and oats this year. The supply of barley is already exhausted and only a few oats remain yet to be distributed. In this distribution we are sending from one bushel up, so that the farmer will be able to save seed without the difficulty he has when small amounts are distributed.

The weather during the month of March has been very favorable to wheat, which is looking very well at this time. The last few days we have had a cold wave but I do not think it will do serious damage to wheat. It will postpone spring seeding, however.

The grains sown for hybridization are now beginning to head and crossing will soon be underway. A number of varieties which are resistant or susceptible to smut have been sown and one of our graduate students, Mr. Barney, will work on the inheritance of smut-resistance. In addition to the work that we shall do here, we have supplied Dr. Geo. M. Reed of the Brooklyn Botanic Garden with seed of a number of F_2 hybrids which he will grow in his smut nursery there.

The seed for the oat and barley nursery is all ready and we are awaiting good weather in order to make our seeding. In addition to the experiments at Ithaca, comparative tests of some twelve strains and varieties will be made in several of the counties. There will also be a number of demonstration tests of oats in addition to the tests mentioned.

Professor R. Summerby of Macdonald College is here now taking graduate work, majoring in Plant Breeding, and will work on some barley hybrids and on a study of methods for making comparative experiments with small grains.

GREAT PLAINS AREA
(South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sielinger) The trip (Washington, D. C. to Woodward, Okla.) was made in good time and allowed me most of Saturday to visit the Station at Columbia, Mo. The Sorghum proposition in Missouri is in the Ozark region, where the soil is too light to grow corn profitably. They have at present decided that Sunrise kafir is the variety best adapted to their needs and are going to give it an extensive trial this season. The crops men at Columbia seem to be rather enthusiastic about kafir in Missouri, the area to which kafir is adapted, according to their opinion, including about about one-third of the State. I outlined the work the Office is doing in the sorghum belt.

The night I arrived in Woodward was a cold one, temperature of 21.5° F. was recorded at the Station. This freeze put things back a lot and killed all the fruit except grapes.

KANSAS

Fort Hays Branch Station. (A. F. Swanson). The seeding of oats and spring wheats in the varietal experiments was completed on March 19 and that of barley on the 21st. These varieties are just now coming up.

Plats of oats and barley in the date of seeding experiment were sown on February 17 and had emerged by March 10. They suffered a severe freeze on March 28 when the temperature fell to 10 degrees F. Just how severe the injury will be is not apparent at this time but some new growth already has taken place. Another seeding was made March 15 and was just appearing above the ground when the heavy freeze occurred.

During the month of March only .49 inches of rain fell in comparison with an average of .97 inches during a period of 50 years. Since January 1 the winter has been mild with alternate freezing during the nights and thawing during the day. This resulted in the ground becoming very fine and ashy and during the early part of February soil blowing became evident.

The first blow of any consequence came on Feb. 11, followed February 15 and 16 by damaging storms. Some damage was done February 24 and 25. For a short period during March 25 the soil again moved freely. On March 26 one of the most severe storms of the season occurred, the wind rising at 9 A.M. and continuing until midnight, beginning in a southeast direction and ending as a stiff north wind which reached the maximum at 9 P.M. This was followed by a freeze of 10° F. Much wheat which was considered safe up to this time was entirely killed. The heavy freeze was particularly damaging to the weak plants having exposed roots and the fact that the further loss of vegetative growth offers no resistance to the wind and moving soil. It is estimated that about 50 percent of the wheat crop of Ellis county has blown out. The surrounding counties, however, are only slightly injured.

The experimental plats on the Cereal Project passed through the blowing season so far with but little damage except that all plats in dates of seeding after October 14 were completely blown out. A uniform field of about 15 acres surrounding the experimental plats suffered much damage and was later seeded to barley. The season offered some study for the control for soil blowing.

On fallow and fall-plowed ground where the wheat was seeded October 1 or before, no damage occurred except for slight lodging of drifting soil. Fallow and plowed ground which was seeded on October 7 blew severely. Here lister rows were run in groups of four with the groups about two rods apart. These rows were later filled and the entire field seeded to barley. Observation at the present time indicates that it would have been much better to have listed the entire field before seeding to barley, or to have roughened the ground with a broad-shovelled cultivator. Certain areas where this was done held remarkably well. A fallow strip of land cultivated with a broad-shovelled cultivator proved satisfactory against soil blowing.

Sorghum stubble ground listed late last fall passed through the season satisfactorily. Part of this ground which was thrown in with a disc cultivator and seeded to barley and oats also withstood the wind. A ten-acre field fall plowed and left rough blew severely until cultivated. Ground, fall plowed for oats when cultivated in one direction and seeded at right angles, has given good results.

The shovels on the cultivator used are six inches wide and so arranged that they throw up furrows six inches deep and a foot apart.

In the large commercial fields single furrows were listed in both directions so that squares were formed approximating 100 feet in diameter. This proved satisfactory when done on fields which had not begun to blow but did not prove of much value when done after soil blowing had begun.

A heavy growth of thistles and weeds was burned from a last year's wheat field in preparation for a row crop this spring. The ground was given a good single disking. No soil blowing took place.

NORTH DAKOTA

Dickinson Substation, Dickinson (Ralph W. Smith). During the month of March the weather has been very changeable. There have been several days when the ground has been thawed sufficiently to permit some field work but frequent sudden cold spells have interrupted field operations so that such work has not become general. Some seeding has been done and with continued warm weather for a few days, seeding will become general.

The snowfall during the winter was considerably less than usual so that the ground is rather dry. The total precipitation for March was 1.01 inches.

Winter wheat and rye appear to be in unusually good condition at this season of the year, and, with favorable weather during the next month, they should have a fair start toward a crop.

If the weather permits, seeding of the experimental plats will begin within the next week or ten days.

MONTANA

Judith Basin Substation, Moccasin, Mont. (Ralph W. May). (March 16) Snow amounting to .45 of an inch of precipitation has fallen since the first of March. This is about normal precipitation for one-half of the month. This precipitation is the most we have had in any one month since last October.

The moisture which we now have should be sufficient to bring up all of the late-sown fall wheat which has not yet emerged and start it growing. The ground is covered with snow and it is not possible to make observations on the wheat in the fields. Practically all of the spring plowing on the Station Farm was completed when the snow began falling.

Mr. A. J. Ogaard, Extension Agronomist of the Montana Agricultural Experiment Station, and Mr. Carl Peterson, County Agent of Fergus County, Montana visited the Station one day since the first of the month.

(March 31.) The precipitation during March has been .60 of an inch, all of which fell in the form of snow. Although the precipitation was light it has helped the fall-sown wheat a great deal. Temperatures have averaged very mild. The whole winter has been remarkable for mild temperatures. If the present weather continues many farmers will probably begin sowing spring grain next week. We may start seeding next week also.

It now appears that there will not be sufficient survival in the ordinary drill seedings in the furrow drill experiments to pay to save them, while the furrow drill seedings apparently have a half stand or more. However, the wheat plants in the furrow drill plats are weak and unfavorable weather yet may kill many of the plants. The wheat in the nursery does not look as promising as it did a month ago but if the weather continues favorable there probably will be a good stand.

COLORADO

Akron Experiment Farm, Akron (F. A. Coffman). Very favorable weather conditions for field operations prevailed furing the greather part of March at the Akron Field Station. Until March 26, the weather was unusually warm and mild. On that date a rain and snow storm visited this section. The snow was unusually moist and almost no drifting resulted. A total of 1.11 inches of precipitation was recorded for this storm. The last five days of the month were rather cold with gradually rising temperatures, so that on April 1, very little of the snow was left.

Practically no soil-blowing was experienced at Akron during March this year. High wind velocities were recorded several times during the month, but soil moisture conditions were favorable, and no appreciable damage resulted from the wind. The precipitation of March 26, put the soil in excellent condition and it seems hardly likely that any serious injury to crops will be experienced from soil-blowing at Akron this season.

Winter wheat in northeastern Colorado, is now in excellent condition. The warm weather during March, together with the favorable moisture condition this spring, have brought the winter wheat prospects in this section up to nearly normal. This is a very decided improvement in the condition of the crop over that early in the winter, as at that time thousands of acres of wheat in this section had hardly started to show above the ground.

Prior to the storm of March 26, field work in this section was going forward very rapidly. At the present time the soil is still too wet to permit field operations to any extent. Many of the farmers in the section adjacent to the station had prepared the soil for the seeding of spring cereals and considerable grain had been sown before the storm came.

The work on Akron Field Station, has been keeping pace with the season. Practically all of the ground for seeding the spring cereals has been prepared and the greater part of the spring grain field plats have been sown. A total of 150 plats of spring grains has been sown in the Cereal Project. This grain has already started to germinate and with favorable weather conditions will be showing above the ground before the end of the week. During the lull in field work, caused by the storm of March 26, the grain for seeding the nursery rows has been prepared and it seems likely that we will finish the seeding of our spring cereal crops at Akron by April 10, unless unfavorable weather conditions are experienced.

WESTERN BASIN AND COAST AREAS.
(South to North and West)

IDAHO

Aberdeen Substation, Aberdeen (L. C. Aicher).

Thus far we have had a wonderful spring for all farm work. The Station soil is all in readiness for planting. This has been a very early season for us and probably half the small grain in this section has already been planted. Last night and this morning snow fell continously and at this writing we have about one foot of snow on the level. This will soon melt it is believed and will all enter the ground, thereby assisting further in the preparation of the best seed bed we have ever had at Aberdeen in my ten years here.

All pea varieties have been planted and grain varieties are ready for planting. These will be put in as soon as this snow melts and the ground can be safely worked. The new part of the irrigated farm, which was formerly the dry farm, gives promise of an excellent stand of alfalfa over practically the entire area. A few soil experiments, in the nature of application of P_2O_5, Sulphur, Land Plaster, and combinations of each will be begun on some of this alfalfa land this season. This work is being done in connection with the Agronomy Dept. of the Univeristy.

Nursery planting of oats and barley will begin as soon as the seed arrives. A wheat nursery including many wheat hybrids will also be planted.

Latest reports from the Snake River watersheds indicate that there will be an abundance of water for irrigation this season. With plenty of moisture in the ground to give the crops a good start and an assurance of plenty of water for irrigation, most of the worries of the Idaho farmers are over. The co-operative marketing of wheat is being talked among farmers quite generally and in some sections 75 to 80 percent of the farmers have signed contracts to sell co-operatively. Probably the most serious thought on the part of the farmers in this state is now given to the effort to get relief from the very burdensome freight rates. Idaho is very dependent upon transportation because of the long distance from most markets, and the added freight rates amounting on some commodities as high as 30 percent has taken all the profit out of farming. It is doubtful if there is a state in the Union which has felt the increased freight rate as much as has Idaho and unless this rate is decreased the farming interests of the state will be seriously injured.

Farmers are nearly all broke but optimistic believing that prices on farm commodities will improve somewhat and hoping that farm machinery prices will come down.

CALIFORNIA

Plant Introduction Station, Chico (V. H. Florell). (March 16) Rains have fallen again during the past week which brings the seasonal total to 31.12 inches at the Plant Introduction Garden. Records taken at Chico, 4 miles distant, show 28.56 inches in the same period.

The fall sown grain is generally in excellent condition. The indications are that some of it may grow too rank, however. The winter-sown grains are emerging with good stands.

(April 1, 1921) A number of the early varieties of grain are heading. The earliest of the wheat varieties this year is Bunyip which is practically fully headed. The Hard Federation and White Federation have begun to head but are practically a week later than Bunyip. Of the barleys the California Mariout and Smyrna are nearly fully headed. Coast is just beginning to head. In the dormancy experiment with barley, the Nekano Wase in the first two dates of seeding has begun heading. The Fulghum variety of oats in the two earliest dates of the date-of-seeding experiment also is heading. The two earliest sowings of flax showed their first blossoms several days ago. Flax is backward in growth this season.

The winter-sown grain in commercial fields is in excellent condition and with a few spring rains should make a good crop. The stand is good and the fields are clean. The fall-sown wheat on the other hand is not showing up so well but is beginning to show the effects of the wet winter. Many of the fields are weedy and stands are unsatisfactory in a large number of cases. The reduced stands are due to injury through lack of drainage and also to poor stooling. A very large proportion of the plants apparently will produce only one or two culms on the heavier lands. At the Plant Introduction Garden also, where the soil is fertile and warm and in every way favorable, tillering has been weak, with from 1 to 3 culms per plant. There appears to be no difference in this respect among varieties (in the field plat experiment), nor between winter and spring varieties. In spots or areas where the soil is richer, tillering is some better. Winter-sown grains on the contrary are tillering nicely.

The weak tillering last fall must be attributed to the excessive precipitation accompanied by cool, cloudy weather. In just what way this affects tillering is not clear to me. It may be possible that the soluble nitrates, especially, which are so essential for the best development of the young plant must have been pretty well diluted at a critical time during the tillering process.

CEREAL COURIER

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(NOT FOR PUBLICATION)

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Vol. 13 April 20, 1921 No. 8
Personnel (April 1-20) and Field Station Issue.

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PERSONNEL ITEMS

Chas. E. Chambliss left Washington on April 9 for our cooperative rice station at Crowley, La., where he will spend a few days inspecting the experiments there and completing arrangements whereby some two hundred rice selections adapted to non-irrigated conditions will be shipped from Crowley to Florence, South Carolina, to be grown on the Pee Dee Substation.

Leroy E. Compton has been appointed Assistant Pathologist, effective May 1.

John R. Fitzsimmons, who has been under appointment as Collaborator in connection with the barberry eradication campaign in Colorado for several months, has been appointed Field Assistant effective April 16 to serve as State leader in that State.

Dr. F. E. Kempton returned to the office on April 16 after a trip to LaFayette, Ind., and St. Paul, Minn., where conferences of barberry eradication leaders from these respective sections were held for the purpose of discussing plans and the best methods of prosecuting the summer campaign. On his return trip he stopped at Madison, Wis., to inspect an area of escaped barberries near Black Earth, Wis.

Forrest D. McCrea has been appointed Field Assistant, effective June 1, for duty in the barberry eradication campaign in Indiana. Mr. McCrea served in this capacity during the past two summers.

Ray J. Plaster was appointed Field Assistant, effective April 12, and has been assigned to the barberry eradication campaign in Indiana.

M. N. Pope returned to Washington on April 16 from Tifton, Ga., where he has been since April 5 making genetic and physiological studies on barley.

Edith K. Seymour, who has been stationed at Madison, Wis., in connection with oat smut investigations, arrived in Washington on April 8 and spent several days in conference with Drs. Humphrey and Tisdale concerning these investigations. She has resigned effective April 20.

C. W. Warburton, administering the distribution of the $2,000,000 appropriated for the purchase of seed grains for farmers in drought-stricken areas, reports under date of April 17 that $1,000,524.55 had been disbursed. By States, the disbursements were: North Dakota, $542,000; Montana, $435,000; Idaho, $17,000; and Washington, $1,000.

Dr. W. H. Weston, Jr., left Washington on April 18 for Summerville and other points in South Carolina to investigate a suspected outbreak of downy mildew.

H. M. Woolman left Washington on April 5 for his station, Corvallis, Ore., and on his way out will stop at Berkeley, California, to confer with Prof. W. W. Mackie and others concerning our cooperative cereal smut investigations.

VISITORS

H. Howard Biggar, who formerly was in this office, visited us on April 19. He has just resigned his position as associate editor of the Dakota Farmer to accept the agricultural editorship of the Daily Drovers' Journal of Omaha. He is taking a vacation of two weeks before assuming the duties of his new position and is spending this time in a tour of the East.

Prof. J. Robert Duncan, corn specialist at the Michigan Experiment Station, called at the office on April 4. He was enroute to East Lansing, Mich., from Miami, Fla., where he has been temporarily engaged with the Pennsylvania Sugar Company.

Dr. C. Ferdinandsen, plant pathologist of Denmark and successor to the late Dr. F. Kølpin Ravn, visited the office on April 19.

Dr. Max W. Gardner, pathologist in charge of truck-crop diseases at Purdue University, was an office visitor on April 2.

Dr. F. R. Jones of Madison, Wis., was an office visitor on April 15.

MANUSCRIPTS AND PUBLICATIONS

The unusually warm weather of the winter months was especially favorable to early sown manuscripts in the Farmers' Bulletin series. Early heading of several varieties has resulted, as will be noted by reference to the March 31 and current issues of the CEREAL COURIER. It is hoped the severe frosts of March 28 and April 11 will not reduce the yields.

Manuscript of a brief article on the work being done by the Office of Cereal Investigations which affects farmers in Michigan, Wisconsin, and Minnesota was submitted on April 6, for publication in the "Wisconsin Banker & Manufacturer."

A manuscript entitled "Fulghum Oats " by T. R. Stanton, was submitted on April 13 for publication in the Farmers' Bulletin series.

Galley proof of Farmers' Bulletin No. 1213, "Flag Smut of Wheat and its Control," by W. H. Tisdale and Marion A. Griffiths, was read and corrected on April 15.

A paper entitled "Effect of Time of Irrigation on Kernel Development of Barley," by Harry V. Harlan and Stephen Anthony, formerly assistant in Cereal Investigations, appeared in the April 1 issue of the Journal of Agricultural Research.

The article entitled "Cereal Crops, Their Diseases, and Methods of Prevention" (Enfermedades de los cereales y métodos para prevenirlas), by H. B. Humphrey, appeared in Boletin de la Union Panamericana, vol. 52, no. 3, p. 308-324, 12 fig.; issued March, 1921.

Supplementing the list of available translations of foreign papers on cereals and cereal diseases given in vol. 13, no. 2, p. 12-15, of the Cereal Courier for January 31, 1921, the following translations are now available in the Library of the Bureau of Plant Industry:

Eriksson, Jakob. Om parasitismens specialisering hos sädesrostsvamparne. (On the specialization of the parasitism in the cereal-rusts.) In K. Landtbr.-akad. Handl. o. Tidskr. 34: 3-40. 1895. (Meddel. K. Landtbr.-akad. Experimentalfält N:r 30.)

---- Fortsatta iakttagelser rörande svartrostens specialisering. (Continued observations relative to the specialization of black rust.) In K. Landtbr.-akad. Handl. o. Tidskr. 36: 114-118. 1897. (Meddel. K. Landtbr.-akad. Experimentalfält N:r 47.)

---- Über das vegetative leben der getreiderostpilze, I: Puccinia glumarum (Schm.) Eriks. & Henn. in der heranwachsenden weizenpflanze von Jakob Eriksson und Georg. Tischler. (On the vegetative life of the cereal rusts, part 1. Puccinia glumarum (Schm.) Eriks. & Henn.) K. Svenska Vetenska.-akad. Handl. n.f., Bd. 37, no. 6, 1904.

Lindfors, Thore. Studier över fusarioser. I.--Snöhögel och strafusarios, tvenne för vår sädesodling betydelsefulla sjukdomar. (1. Snow-mould and straw-fusariosis.) In K. Landtbr.-akad. Handl. o. Tidskr. 59: 424-471. illus. 1920. (Meddel. N:r 203 Centralanst. Försöksv. Jordbr. Bot. Avdeln. N:r 19.)

FIELD STATION CONDITION AND PROGRESS

HUMID EASTERN STATES (South to North)

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor). The freezing temperature during the last week of March caused some damage to the earlier ryes and wheats. Rye in sheltered places which had headed prior to this date contains many heads which have turned white, similar to those observed last year. The stamens in these white heads have turned black, showing evidence of the freeze. In the low spots of the wheat and rye plats where the foliage growth was rank the plants are badly lodged and turning yellow.

With the exception of Rosen, all of the ryes grown at Arlington are now in the heading process. Invincible, a variety of rye grown at Arlington for the

second year, appears to be a mixture of early and late ryes, the latter resembling Rosen.

The Nakano Wase strains of barley headed during the first week of April and show promise of good yields.

The spring sowing of foreign introductions in the detention nursery was completed this week. The germination of these seeds has been very poor in the past.

In the greenhouse the barley hybrids and parents are mature, and the oats and wheat are ripening rapidly. A spelt-like form was produced in the F_1 by crossing Purple Straw, C.I. 1915, with Aegilops-squarrossa. This hybrid is sterile. Another distant hybrid, Aegilops ovata x Rye is also proving sterile in the F_1.

Another freeze was recorded at Arlington on April 11, when a minimum of 31° F. was reached. The rainfall for the first two weeks of April has been .99 inch.

SOUTH CAROLINA

Pee Dee Substation, Florence (Hugo Stoneberg). I arrived here on March 29. The first few days were mighty cool, quite a contrast to the hot sunny days I experienced just before leaving Washington and the kind I expected to find here in the "Sunny South." However, since then the weather has been moderate, with no extremely hot or cool days, but rather cool nights with a light frost occurring on the 12th. Some of the emerging corn was nipped and also some Irish potatoes. No damage of any consequence occurred. On the 14th we experienced considerable wind. However, it was a very poor imitation of an "Oklahoma sand storm." The nights of the 14th and 15th we had a general rain 1.25 inches. The weather in general has been favorable for field work.

Our corn breeding experiments were planted March 31 and April 1 and 2. They began emerging on April 9.

During the past two weeks, the ground has been prepared and the corn and cotton varietal experiments, fertilizer experiments, and rotations have been planted. Most of the corn is showing a 100 per cent stand.

The first cutting of alfalfa was cut this week and yielded a ton to the acre. The oat plats are knee high and beginning to head.

The tobacco plats are being set out today.

I like it here very much, and find everything very agreeable - the climate, the people, etc. I like being located on an experiment station where I come in close contact with various crops and experiments besides my corn work.

MISSOURI

State Experiment Station, Columbia (L. J. Stadler). According to the State Board of Agriculture, the condition of wheat in Missouri on April 1 was 93 per cent, indicating a yield of 14 bushels per acre or a total yield of 39,480,000 bushels for the State. This is 23 points above the condition of wheat last April, in spite of some slight damage done to the crop by the Easter freeze. Rye condition is 93 per cent also considerably above the condition reported a year ago.

Oats seeding in this State is now practically completed and a large proportion of the crop was sown previous to March 15. The acreage of oats has been increased considerably and a corresponding decrease in corn acreage undoubtedly will result. The increase in the acreage of oats is caused chiefly by the intention of farmers to seed down more land to grass this year.

INDIANA

Purdue University Agricultural Experiment Station, LaFayette (R. J. Hosmer During the month 9 barberry bushes were found in 4 locations in towns and 33 bushes on 3 farms in the original survey. A total of 29 bushes were removed from 5 properties. In the resurvey, 70 bushes were found on 11 properties.

ILLINOIS

State Entomology Building, Urbana (L. R. Tehon). During the month of March, an effort was made to secure the removal of all barberries which are still growing in Boone, Stephenson, and Winnebago counties, where a farm-to-farm survey was completed last summer. The State Department of Agriculture, through its Division of Plant Industry which is invested with police power, has issued notices requiring removal of the remaining bushes within a short time. L. R. Tehon takes up his duties as State Leader on April 1. Dr. E. R. Schulz and another field assistant will begin work early in April in McHenry County, on the north line of the State.

MINNESOTA

College of Agriculture, University Farm, St. Paul (Leonard W. Melander). Since December, 1920, no field work has been accomplished. Considerable work has been done on publicity, both directly and indirectly. Approximately three thousand barberry posters have been sent out during the month of March. Circular letters were sent to all property owners upon whose properties common barberry bushes had been found and destroyed last year, warning them that sprouts were as much a menace as the original bushes. Newspaper articles have been published, giving publicity to all meetings held in the interests of the campaign in this State.

Prospects look good for State aid in the campaign. If this is forthcoming the barberry eradication force for Minnesota can be tripled, as the bill now before the State Legislature provides for an appropriation of $25,000 a year for the next two years.

Due to the fact that the winter has been rather open, field work will begin April 1. One squad is prepared to start, with the hope that they are beginning the most successful season since the campaign was begun.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger). April has been rather cool and damp to date. The first plat in the date-of-seeding experiments was to have been sown today, but the rain last night will delay it a few days. Wheat is making a rapid and heavy growth and looks good; however, it is difficult even to guess whether there will be a good wheat crop this year.

The writer has been busy getting sorghum and broomcorn seed heads thrashed and there is yet some to do.

The outlook for a fruit yield is about as poor as could be imagined. The weather in March was warm, which forced the fruit blossoms out and the temperature of 21.5° F. on March 28 froze practically all fruit blooms and buds except grapes.

Precipitation for April has been: 0.08 in. on Apr. 5, 0.62 in. on Apr. 6, 0.71 in. on Apr. 14, and 0.19 in. on Apr. 15, a total of 1.6 inches to date. The maximum temperature was 82° on April 4, and the minimum was 26° on the 10th.

KANSAS

Fort Hays Branch Station, Hays (A. F. Swanson). Since April 1, three inches of rain have fallen, which has been a wonderful help in stopping soil blowing and in reviving all crops which survived the heavy freeze of March 28 and the soil blowing previous to that time. A large acreage of wheat was completely winter killed by the last freeze and oats and barley which had been up for a week or more previous to the freeze are practically all gone. Oats and barley which were coming up at the time of the freeze are now making good progress. Fulghum oats and Burt x Sixty-Day were outstandingly hardy in this respect.

Nearly all of the seed for the sorghum varietal and head-to-row experiments has been threshed and arranged for planting.

The annual "Round Up" of the Ft. Hays Experiment Station will be held Saturday, April 30, when a large number of farmers and stockmen are expected at Hays. Prominent speakers will be on the program. More than 200 head of cattle will be in the lots just as they were carried through the experiments. Straw, sorghum silage, stover, and fodder have been the important feeds used in these experiments supplemented with cottonseed cake.

COLORADO

Agricultural College, Fort Collins (John R. Fitzsimmons). With the coming of spring, active field work in the barberry eradication campaign will begin in the State of Colorado. At the present time we are preparing and mailing several hundred "Life Cycle Cards " mounts of barberry and black stem rust, to schools, county agents, and influential property owners in localities where escaped barberry bushes are likely to be growing, namely, the district around Loveland and the south side of the Arkansas Valley near Canon City. Letters are being prepared and mailed to the county agents, Farm Bureau members, and prominent farmers throughout the State, pointing out the difference between black stem rust and leaf rust. We are asking them to notify us of the first appearance of black stem rust so that we may get clues as to the presence of either cultivated or escaped barberry bushes.

By the first of May we expect to place at least one squad of field men on farm-to-farm survey in eastern Colorado. All of the cultivated area east of the mountains, likely to have shrubbery and not already surveyed, is included in the plan of work for the coming summer. It is hoped that the survey of all probable sources of barberry may be completed by next fall.

WYOMING

College of Agriculture, University of Wyoming, Laramie (Ralph U. Cotter). Due to weather conditions not much scouting with automobile has been possible in the rural districts. Most of the month has been spent in the office, preparing material for the publicity campaign to be started early in April. Material is being prepared to send to every rural school in the State. It is

expected that with the aid of the school children of the State, the greater part of the barberries will be located and subsequently eradicated. The State law providing for the eradication of barberry is expected to be of much assistance in persuading the doubtful ones that they really must remove their barberry.

NORTH DAKOTA

State Experiment Station, Agricultural College, Fargo (George C. Mayoue). The State leader and one assistant made a ten-day field trip by rail through the northwestern part of the State, during which 33 towns were resurveyed. A total of 61 properties were revisited, resulting in the finding and destroying of 10 sprouts on one property, 30 bushes on 9 properties in town, and 2 bushes on 1 property in the country. Lectures and demonstrations on the barberry and its eradication were given in 12 towns. Sometimes as many as three programs before different audiences were given in the same town on the same day. For example, at Crosby, N. D., a lecture and demonstration was given to the High School assembly at 11 A. M., to a Farmers' Meeting at 2:30 P. M., and to a Community Club meeting at 8:00 in the evening. Conferences were held with county agents, county and city school superintendents, leading citizens and members of the Commercial clubs of the diffenent towns.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.). After the mild weather during the winter and the summer weather we have been having in Washington, D. C., for some weeks, North Dakota seems very cold. It was snowing in Fargo, N. D., on April 8, and there was snow on the ground at Mandan that night. The leaves have not started to come out. Brome grass, Siberian wheat-grass, and winter rye have begun their spring growth.

As a result of the open winter and the comparatively early spring, field work began early and the land is all prepared for sowing spring grains.

The first flax plats in the date-of-seeding experiments were sown April 13, and the spring wheat varietal plats were sown April 16. Wheat will be sown in the D. L. A. rotation plats early this week.

Mr. Charles H. Clark, formerly agronomist in charge of Flax investigations in this office, visited the station Friday, April 15, and is still in Mandan selling seed for the Albert Dickinson Seed Co.

Maximum temperature for the first half of April was 74° recorded April 3, minimum 15° recorded April 15. Precipitation .58 in. Average mean temperature for the first half of April was 40°. Total precipitation for the months of January, February, and March was 1.06 inches.

Dickinson Substation, Dickinson (Ralph W. Smith). Field operations were interrupted by light snowstorms and freezing weather last week, but seeding was resumed this week and has now become general.

The varietal plats of spring wheat have been sown and also increase plats of the best varieties.

The varieties of winter rye are in good condition. The winter wheat varieties are rather thin in stand, but if rain arrives before the roots dry out a fair stand may yet be obtained.

The weather remains cold and the grains will be slow in germinating unless it becomes warmer. The precipitation this month has been very light so far, although snow fell nearly every day last week.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May). The largest snow of the winter fell during the first week of April. The precipitation totaled about .50 of an inch. We have since had several clear days which melted the snow gradually, permitting the water to soak into the soil. There was no run-off from the melting snow such as we had last spring. The moisture that is now in the soil will put most of the fall-sown wheat in fine condition.

Some of our experimental fall-sown wheat was too far gone when the snow fell to be benefited. As a rule the furrow drill and nursery seedings look fine. Our commercial field, which was sown on newly broken sod, is in exceptionally fine shape. Fall-sown wheat on stubole on neighboring farms is also doing well.

The good weather has dried the fields sufficiently to permit us to begin disking the ground for the cereal varietal experiments this morning (April 13). If the present weather continues, the cereal varieties will be sown by the close of the week.

Mr. P. V. Cardon, formerly Superintendent at the Judith Basin Substation but at present Agronomist at the Montana State College, has resigned, effective July 1, to become Director of a branch of the Utah Agricultural College.

C E R E A L C O U R I E R

Official messenger of the Office of Cereal Investigations
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 APRIL 30, 1921 No. 9

Personnel (Apr. 20-30) and Project Issue.

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PERSONNEL ITEMS

Henry D. Barker was appointed effective April 16 as Agent to assist in cereal rust investigations conducted in cooperation with the Minnesota Agricultural Experiment Station.

Louis W. Clark has been appointed as Field Assistant, effective May 1, and will assist in barberry eradication in Wisconsin.

Walter S. Collins was appointed effective April 16 as Field Assistant and has been assigned to the barberry eradication campaign in Illinois.

A. C. Dillman will leave Washington for Manman, North Dakota, on May 2 where he has charge of our flax breeding experiments.

Mrs. Rose Gamble, botanical artist, made a trip to Baltimore on April 29 to confer with L. C. C. Krieger concerning the technique of botanical illustrating.

Friends of Carl Kurtzweil, formerly assistant in rust investigations at the Tennessee Experiment Station, will greatly regret to learn of his serious illness, as noted in the following letter from Director C. A. Mooers, dated April 19:

> "I suppose you know that Kurtzweil is very ill. In a letter received today Essary was informed that Kurtzweil's chances of getting well were very slim indeed. He has an enlarged heart, enlarged spleen, and the apex of both lungs affected, also other complications. Of course, we hope for a favorable outcome, but the chances are said to be very much against it."

Ruch B. Locke has been appointed effective June 1 as Field Assistant in barberry eradication for duty in South Dakota.

Miss Cecile A. Reay was appointed effective April 16 as stenographer and typist. Prior to her appointment here she was employed in the War Department.

Albert B. Seitz was appointed Field Assistant, effective April 22, to assist in barberry eradication in Ohio.

Daniel E. Willard was appointed Field Assistant, effective April 18, to assist with our black stem rust investigations.

VISITORS

Dr. W. A. Gardner, botanist and plant physiologist of the Alabama Polytechnic Institute, was an office visitor on April 22.

Dr. L. R. Jones, plant pathologist of the University of Wisconsin, visited the office on April 27.

Messrs. Axel H. Stensaard, a representative of the General Agricultural Society of Sweden, and Gunner Christenson, a Swedish agriculturist, were office visitors several times during the last ten days.

Dean C. B. Williams, Agronomist of the North Carolina Agricultural Experiment Station, was an office visitor on April 29, in the interests of cooperative cereal experiments.

MANUSCRIPTS AND PUBLICATIONS

A paper entitled "The Genetic Behavior of the Spelt Form in Crosses between Triticum spelta and Triticum sativum", by C. E. Leighty and Sarkis Boshnakian, was submitted on April 26 for publication in the Journal of Agricultural Research.

A manuscript entitled "Progress of Barberry Eradication", by F. E. Kempton, was submitted on April 29 for publication in the Farmers' Bulletin series.

Galley proof of Farmers' Bulletin No. 1212, entitled "Straighthead of Rice and Its Control", by W. H. Tisdale and J. Mitchell Jenkins, was read on April 25.

Page proof of Farmers' Bulletin No. 1213, entitled "Flag Smut of Wheat and Its Control", by W. H. Tisdale and Marion A. Griffiths, was read on April 22.

Copies of the reprint of the article entitled Another Conidial Sclerospora of Philippine Maize (In Jour. Agr. Research, vol. 30, no. 9, p. 669-684, pl. 76-79, 1 fig., issued Feb. 1, 1925), by William H. Weston, Jr., were received April 6. (Do you wish this again?)

218-B. RUST INVESTIGATIONS
(Dr. H. B. Humphrey, Pathologist in Charge)

PROGRESS OF THE BARBERRY ERADICATION CAMPAIGN, 1918-1920.

(F. E. Kempton, Pathologist in Charge)

A campaign for barberry eradication was begun in April, 1918, by the Office of Cereal Investigations, Bureau of Plant Industry, Department of Agriculture, in cooperation with the following thirteen States, Colorado, Illinois, Indiana, Iowa, Michigan, Minnesota, Montana, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin, and Wyoming.

A Federal quarantine was placed effective May 1, 1919, prohibiting the movement into the eradication area of any barberries known to harbor black stem rust of wheat or other grains. State laws and quarantines now are effective in all 13 States.

Organization.

In most of the States, the State college or experiment station designated an official to represent the State in the planning and conducting of the campaign. In each State a leader and field assistants are employed by the Office of Cereal Investigations. As a rule, the State leaders are employed throughout the year in each of the 13 States. Field assistants in considerable number are employed during the summer months of each year. During the summer of 1920, about 65 field men were employed during an average period of 3 months. In addition, stenographers are furnished and some temporary field helpers are employed. Help is given also by collaborators from the Departments of Plant Pathology, Botany, and Agronomy, and from the Experiment Station and Extension Division 5 of the State colleges of agriculture.

In April, 1920, formal cooperation was effected with the Extension Division of the agricultural college of each of the 13 States. Where barberry eradication laws existed, or as new laws became effective, informal cooperation was established with the law enforcing agency of each State. To this agency is furnished information of the location of bushes which property owners have neglected or refused to remove so that complete eradication can be effected by legal means. State entomologist, horticultural inspectors, and members of horticultural boards and of State departments of agriculture who are charged with the enforcement of State laws give considerable aid in actual inspection and in eradication by law enforcement.

Survey to locate bushes.

Field men employed by the Office of Cereal Investigations under the direction of the State leader in each State inspect all city and rural properties for common barberries. The survey was made first in cities and towns and villages. Preliminary inspection showed that probably there were more barberries in the country than in the cities and that many of these were escaped from cultivation. As rapidly as the survey of the cities and towns was completed in the various States, a rural survey was started. In this, all farmsteads, woodlands, wind breaks, timber claims, brushy pastures, stone quarries, stream banks, and fence rows are inspected carefully for escaped barberries, especially wherever cultivated fruiting bushes are found nearby.

This farm-to-farm survey is being completed county by county in definite areas of each State as rapidly as funds permit. In the more western States of the group, the long settled areas likely to contain this shrub are carefully inspected while forests, unsettled dryland areas and more recently and thinly settled sections not likely to have shrubbery are not surveyed. Travel is accomplished usually by automobile, carrying two men. One drives the car. The other maps the location and makes notes of bushes. Both inspect properties.

Resurvey to Locate Sprouts and Seedlings.

Careful resurveys are as necessary and important as the original inspection of properties. While most bushes are located on the first survey, a few may be missed. When bushes are not removed carefully, a growth of sprouts is almost certain to follow. Seeds from berries scattered in digging grow readily in the soil loosened by the digging. Others may be scattered by the birds. Seedlings under leaves among the grass and weeds can not always be seen. All such sprouts and seedlings are even more likely to become rusted than are mature bushes and are as great a menace to grain crops. To neglect the destruction of these would serve only to nullify such work as has already been done.

Results

The campaign for barberry eradication has advanced through its third field season. The results will be summarized by years.

Results in 1918. During the first season, an organization was formed, a campaign of publicity and education was conducted that reached out to all parts of the territory included, and surveys to locate bushes were carried on in the cities and towns of most of the 13 States. The greatest efforts were exerted where apparently they could accomplish the largest results in the quickest time. Several hundred thousand barberry bushes were removed through the campaign of education, especially from nurseries and instititions.

Twelve States either found that existing laws covered the situation, passed amendments to existing laws, or made plans for the enactment of such legislation as soon as possible.

Many barberry bushes were found cultivated on farms in the vicinity of towns, and numerous reports of both cultivated and escaped bushes were receive For this reason, preliminary farm-to-farm surveys were planned in representative counties in a number of the States.

Table 1 gives the results of the survey from April 1, 1918, to December 31, 1918.

Results in 1919. During the second season the survey developed two phases, the original survey and a resurvey. In the original survey, the inspection of city and town properties was continued and practically completed. Systematic farm-to-farm surveys were begun, as previously planned. Minnesota completed three counties and surveyed parts of 5 others. North Dakota completed 4, Indiana 12, and Nebraska, working by townships, covered

Table 1 - Data showing results obtained in barberry eradication from April 1, 1918 to December 31, 1918, including the number of properties having bushes, in cities and towns, and in country, and the total in both, the number of escaped bushes, and the number from which bushes were removed; also the number of bushes found in cities and towns, and in country, the number of escaped bushes found, the total number of bushes found, and the total number removed.

State	Number of Properties having Bushes					Number of Bushes in				
	In Cities and Towns	In Country Having Escaped Bushes	In Country Total	Total Number	Number cleared of bushes	Cities and Towns	Country Escaped	Country Total	Both cities and country Found	Both cities and country Removed
Colorado	240	0	0	240	100	1,808	0	0	1,808	890
Illinois	3,496	0	0	3,496	1,851	41,419	0	0	41,419	25,343
Indiana	2,558	16	91	2,649	2,015	66,869	2,215	6,540	73,409	56,435
Iowa	5,241	0	221	5,462	4,229	610,866	0	21,796	632,662	604,222
Michigan	515	9	173	688	323	12,543	205	2,355	14,898	8,573
Minnesota	1,736	2	298	2,034	1,968	572,849	7,684	96,023	668,872	664,586
Montana	0	0	0	0	0	0	0	0	0	0
Nebraska	2,757	0	15	2,772	1,053	69,211	0	2,701	71,912	31,918
North Dakota	248	0	1	249	249	1,926	0	24	1,950	1,950
Ohio	0	0	0	0	0	0	0	0	0	0
South Dakota	175	5	20	195	22	18,425	1,191	2,145	20,570	1,184
Wisconsin	5,061	95	346	5,407	4,954	267,034	66,143	44,756	311,790	295,574
Wyoming	17	0	1	18	0	2,948	0	1	2,949	0
Totals	22,044	127	1,166	23,210	16,764	1,665,898	77,438	176,341	1,842,239	1,690,475

the equivalent of 7 counties. As the city and town survey was not completed in Illinois, Iowa, Michigan, and South Dakota, the farm-to-farm survey was confined to a few townships in each of these States. In Ohio and Wyoming, the campaign did not get started until the spring of 1919, so the survey of cities and towns kept all available men busy during that year. In Colorado, after completing the survey of a few cities and towns not covered in 1918, a rather careful inspection was made of definite irrigated and dry-farmed areas and some river valleys supposed to contain cultivated barberries. In Montana, the survey of all cities and towns was completed, and all the important cultivated rural areas, including the farms of the principal irrigated districts, the farms in all the main river valleys, and all large ranches in other parts of the State were inspected.

The resurvey was carried on simultaneously with the original survey. Its purpose was to determine what bushes, previously reported, has not been removed and whether or not sprouts and seedlings had appeared where bushes had been dug. During the resurvey, the man revisited 2,967 city properties and 531 farms from which 121,710 bushes, previously reported, had not been removed. Of these, 110,257 bushes were removed from 3,364 properties during the resurvey. A total of 11,048 sprouts also were found and removed. These results proved that the resurvey was a necessary part of the campaign, and that unless a careful reinspection was made, many bushes would remain and a new crop would develop from sprouts and seeds. Table 2 shows the results obtained in 1919.

Results in 1920. During 1920, the third season, efforts were concentrated on the farm-to-farm survey, although a resurvey of cities and villages in the counties covered was carried on at the same time. The farm-to-farm survey covered an area equivalent to approximately 88 counties. In Ohio, 7 counties along the western border; in Indiana, 7 counties; in Michigan, 5 counties; in Illinois, 3 counties; in Wisconsin, 4; in Iowa, 16; in Minnesota, 9 and the greater portion of another; in Nebraska, the equivalent of 11; in South Dakota, 7; and in North Dakota, 7. In Colorado, the survey was completed in a number of mountain valleys which were portions of 28 different counties. The resurvey of all properties in cities, towns, and country on which barberries had been located previously also was accomplished. In Montana, the survey was completed by the inspection of a few cities and villages and a few ranches and farms in the western portion of the State that had not been surveyed. A resurvey was made of all properties upon which barberries had been located previously. In Wyoming, city and town surveys were conducted but no farm-to-farm survey was attempted. Table 3 gives the results of the survey from January 1, to December 31, 1920.

Results in 3 years. During the 3 years from April 1, 1918, to December 31, 1920, almost all cities, towns, and villages in the 13 States of the eradication area were surveyed. In the farm-to-farm survey, an area equivalent to about 183 counties was covered in the original survey, but the necessary resurvey was made in only a few of these counties. All the rural territory necessary to survey in Montana and in the Mountainous parts of Colorado has been completed. A total of 5,444,309 bushes was located on 44,853 properties. Of these, 4,234,179 bushes were removed from 39,247 properties. Of the 1,210,130 bushes not yet removed from 5,606 properties, about 1,000,000 are seedling bushes under 16 inches in height on one farm in Grant County, Wisconsin.

Table 2 - Data showing results obtained in barberry eradication, from Jan. 1, to December 31, 1919, including the number of properties having bushes in cities and towns, and in country, and the total in both, the number having escaped bushes, and the number from which bushes were removed; also the number of bushes found in cities and towns, and in country, the number of escaped bushes found, the total number of bushes found, the total number removed, and the number of sprouts found and removed in the resurvey.

State	Number of Properties having Bushes					Number of Bushes in					Sprouts found and removed in the resurvey
	In Cities and Towns	In Country Having Escaped Bushes	In Country Total	Total Number	Number cleared of bushes	Cities and Towns	Country Escaped	Country Total	Both cities and country Found	Both cities and country Removed	
Colorado	1,206	9	41	1,247	1,159	16,169	50	1,689	17,858	16,019	0
Illinois	2,931	27	126	3,057	3,879	38,113	996	7,177	45,290	55,861	0
Indiana	452	1	186	638	663	7,429	8	2,763	10,192	17,435	736
Iowa	1,398	150	454	1,852	2,513	31,150	27,054	47,014	78,164	104,643	2,883
Michigan	2,726	828	2,986	5,712	3,850	20,433	50,415	83,897	104,330	60,971	0
Minnesota	890	128	326	1,216	1,185	13,918	36,685	41,523	55,441	50,541	0
Montana	151	17	37	188	169	6,575	1	2,031	8,606	8,524	1,073
Nebraska	122	0	42	164	821	878	0	1,693	2,571	14,309	0
No. Dakota	96	0	29	125	125	896	0	241	1,137	1,137	78
Ohio	3,356	25	153	3,509	1,446	189,669	2,666	5,395	195,064	107,159	0
So. Dakota	190	11	43	233	309	3,473	1,680	3,354	6,827	18,701	0
Wisconsin	541	118	183	724	739	7,682	1,561,251	1,562,003	1,569,685	1,569,763	6,166
Wyoming	45	0	5	50	10	861	0	37	898	326	112
Totals	14,104	1,298	4,611	18,715	16,848	337,246	1,680,806	1,758,817	2,096,063	2,025,389	11,048

Table 3 - Data showing results obtained in barberry eradication, from January 1, to December 31, 1920, including the number of properties having bushes in cities and towns, and in country, and the total in both, the number having escaped bushes, and the number from which bushes were removed; also the number of bushes found in cities and towns, and in country, the number of escaped bushes found, the total number of bushes found, the total number removed, and the number of sprouts found and removed in the resurvey.

State	Number of Properties having bushes					Number of Bushes in					Sprouts found and removed in the resurvey
	In Cities and Towns	In Country Having Escaped Bushes	In Country Total	Total Number	Number cleared of bushes	Cities and Towns	Country Escaped	Country Total	Both cities and country Found	Both cities and country Removed	
Colorado	22	1	4	26	269	588	1,347	1,388	1,976	4,336	1,976
Illinois	33	166	190	223	568	133	1,205	1,909	2,042	2,663	661
Indiana	71	2	76	147	731	727	218	831	1,558	10,048	1,116
Iowa	27	22	144	171	181	474	2,219	13,313	13,787	10,860	0
Michigan	345	6	210	555	739	2,975	8,123	17,444	20,419	22,732	45
Minnesota	96	52	166	262	314	1,337	6,499	7,885	9,222	17,938	10,162
Montana	1	0	6	7	25	2	0	74	76	147	3,442
Nebraska	56	5	46	102	721	911	801	1,663	2,574	21,966	1,325
No.Dakota	79	0	60	139	139	960	0	845	1,805	1,805	137
Ohio	330	16	173	503	1,176	4,091	12,543	14,707	18,798	66,733	0
So.Dakota	7	17	81	88	126	26	6,368	8 763	8,789	10,220	913
Wisconsin	178	96	518	696	632	756	1,396,958	1,423,952	1,424,708	348,618	2,118
Wyoming	8	1	1	9	14	123	1	130	253	166	78
Totals	1,253	384	1,675	2,928	5,635	13,103	1,436,282	1,492,904	1,506,007	518,315	22,593

These results include more than a million bushes estimated to have been removed from commercial nurseries during the early part of the campaign. The larger estimated numbers are about 600,000 from Minnesota, 500,000 from Iowa, 200,000 from Wisconsin, and 75,000 from Ohio. Many thousands of other bushes were removed from other commercial nurseries, from parks, from institutional grounds, and private properties, of which no records were furnished to the States by the property owners. The outstanding facts are that of 5,444,309 bushes found only 2,016,247 were in cities, whereas 3,428,062 were on farms. Of these, 233,536 were in ornamental plantings and hedges on 5,645 farms but 3,194,526 had escaped from cultivation on 1,809 farms. Table 4 gives the results by States during the progress of the campaign in the 3-year period from April 1, 1918, to December 31, 1920.

LEAF RUST

(Dr. H. S. Jackson, in charge, and Dr. E. B. Mains, assistant)

In a recent letter received from Dr. E. B. Mains who, with Professor H. S. Jackson, is engaged in the investigation of leaf rusts of wheat, barley, and rye, he reports excellent progress in the further study of the heteroecism of the leaf rusts of barley and rye. A number of outdoor inoculations of the leaf rust of wheat on Thalictrum were made by mulching the Thalictrum plants with rusted wheat straw. Owing to a killing frost, the infection which developed was not so severe as it might have been. In the study of the heteroecism of barley leaf rust there is little to report other than that it will be necessary to do much more work on this phase of the rust problem than has yet been done before anything very definite can be said. Efforts to obtain an infection of the leaf rust of rye on Anchusa indicate that there may be two races of the rye rust one of which may parasitize some other heteroecious host than Anchusa. An effort to determine this host will be made.

Table 4 - Data showing results obtained in barberry eradication, April 1, 1918, to December 31, 1920, including the number of properties having bushes in cities and towns, and in country, and the total in both, the number having escaped bushes, and the number from which bushes were removed; also the number of bushes found in cities and towns, and in country, the number of escaped bushes found, the total number of bushes found, the total number removed, and the number of sprouts found and removed in the resurvey.

State	Number of Properties					Number of Bushes in					Sprouts found and removed in the resurvey
	In Cities and Towns	In Country Having Escaped Bushes	In Country Total	Total Number	Number cleared of bushes	Cities and Towns	Country Escaped	Country Total	Both cities and country Found	Both cities and country Removed	
Colorado	1,468	10	45	1,513	1,508	18,565	1,397	3,077	21,642	21,245	2,596
Illinois	6,480	193	316	6,776	6,258	75,665	2,201	9,086	82,751	83,867	661
Indiana	3,081	19	353	3,434	3,409	75,025	2,441	10,134	85,159	83,918	1,852
Iowa	6,606	172	819	7,425	6,923	642,490	29,273	82,123	724,613	719,608	2,883
Michigan	3,526	245	3,359	6,885	4,912	35,551	58,745	103,696	139,247	90,976	45
Minnesota	2,722	182	790	3,512	3,467	588,104	50,868	145,431	733,535	731,065	10,162
Montana	152	1	43	195	194	6,577	1	2,105	8,682	8,671	4,515
Nebraska	2,[illegible]35	5	103	3,038	2,535	71,000	801	6,057	77,057	68,153	1,325
No. Dakota	443	0	90	513	513	3,782	0	1,110	4,892	4,892	215
Ohio	3,636	41	336	4,012	2,632	193,760	15,209	20,102	213,862	173,862	0
So. Dakota	372	33	144	516	437	21,924	9,239	14,262	36,186	32,125	913
Wisconsin	5,780	309	1,047	6,827	6,525	275,472	3,024,352	3,030,711	3,306,183	2,213,955	8,284
Wyoming	76	1	7	77	24	3,532	1	168	4,160	452	190
Totals	37,401	1,809	7,452	44,853	39,247	2,016,247	3,194,526	3,428,062	5,444,309	4,234,175	33,641

C E R E A L C O U R I E R

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 MAY 10, 1921. No. 10

Personnel (May 1-10) and Field Station (April 16-30) Issue.

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PERSONNEL ITEMS

Charles E. Barth has been appointed, effective June 1, as field assistant for barberry eradication in Nebraska.

Keller E. Beeson has been appointed field assistant, effective June 1, for duty in barberry eradication in Indiana.

Anton E. Flamer has been appointed field assistant, effective June 1, to assist in the barberry eradication campaign in North Dakota. Mr. Flamer served in the same capacity during the summer of 1920.

Leo J. Klotz was appointed effective May 1 to assist in the barberry eradication campaign in Michigan.

Raymond E. Menifee has been appointed field assistant, effective June 1, and will assist in barberry eradication in Indiana.

Julian W. Riddick has been appointed field assistant for barberry eradication in Nebraska, beginning June 1.

Glen H. Stringfield has been appointed field assistant, effective June 1, to assist in the barberry eradication campaign in Nebraska.

Bruce J. Thornton was appointed field assistant, effective May 5, for duty in barberry eradication in Colorado.

Frank Walquist has been appointed field assistant, effective May 15, and will be assigned to the barberry eradication campaign in Wisconsin.

C. W. Warburton, administering the distribution of the $2,000,000 appropriated for the purchase of seed grains for farmers in drought-stricken areas, reports under date of May 5 that a total of $1,613,409.25 had been disbursed. The disbursements by States were: North Dakota, $722,767.25; Montana, $827,009; Idaho, $57,908; and Washington, $5,725.

Frederick F. Weinard has been appointed field assistant, beginning June 10, to assist in barberry eradication in Nebraska.

Dr. J. B. Weston Jr., left Washington on May 7 for Union City, Tenn., and points in that vicinity, to investigate a suspected outbreak of downey mildew, R. W. Leukel having reported the finding of Sclerospora macrospora on wheat near Union City.

Herbert H. Zimmerman was appointed May 1 as field assistant for duty in the barberry eradication in Nebraska.

VISITORS.

Charles F. Drechsler, of the Office of Cotton, Truck, and Forage Crop Disease Investigations, stationed at the Brooklyn Botanical Gardens, visited the office on May 6.

G. M. Johnson, formerly of this office and now pathologist with the Davy Tree Surgery Company, Kent, Ohio, was an office visitor on May 2.

Prof. Nikolas Schnitz, extension agronomist of Pennsylvania State College was an office visitor on May 9.

MANUSCRIPTS AND PUBLICATIONS.

An article entitled "Seed-Coat Injury and Viability of Seed of Wheat and Barley as Factors in Susceptibility to Molds and Fungicides", by Annie May Burd, appeared in the Journal of Agricultural Research, Vol 21, No. 2 p. 99-102, pl. 13-23.

Supplementing the list of available translations of foreign papers on cereals and cereal diseases given in volume 13, Nos. 2, p. 12-15; 8, p. 52, of the Cereal Courier for January 31 and April 20, 1921, respectively, the following translations are now available in the Library of the Bureau of Plant Industry:

Henning, Ernst. Anteckningar om gulrosten (Puccinia Glumarum) ... jämte bilaga Bestämmingar av aciditet och sockerhalt i vattenextrakt av vetesorter med olika resistens mot gulrost av A. Bygden. (Notes on yellow rust (Puccinia glumarum), with calculation of acidity and contents of sugar in aqueous extracts from varieties of wheat possessing different resistance towards yellow rust.) In K. Landtbr. Akad. Handl. o. Tidskr. 58:401-418. 1919. (Meddel. n:r 192 Centralanst. Försöksv. Jordbr. Bot. Avdeln. n:r 16, 25 p., pl., 1919.

---- Om bekämpning mot stinkbrand (Tilletia tritici), strårand (Urocystis occulta) och marrbrand (Ustilago hordei). I. Kort historik och orienterande försök. (On treatment against Tilletia tritici, Urocystis occulta, and Ustilago hordei.) In K. Landbr. Akad. Handl. o. Tidskr. 58:431-449. 1919. (Meddel. n:r 195 Centralanst. Forsoksv. Jordbr. Bot. Avdeln. n:r 18.)

FIELD STATION CONDITION AND PROGRESS

HUMID EASTERN STATES (South to North)

LOUISIANA

Crowley Rice Station, Crowley (J. Mitchell Jenkins) We have been having excellent weather for the past week. This has enabled field work to proceed nicely, and I hope to put in all nursery rices either Saturday or Monday, and if the good weather continues, all seeding will be completed within the next ten days or two weeks. The rice in the date of seeding experiments is germinating nicely. Recent rains assisted the germination, resulting in good stands in the case of plats already seeded.

I notice rice that is up has been injured by the low temperatures of the past week, and also by high winds. This is also true of rice in the vicinity of New Iberia and Rayne, some fields of which I noted on returning from Baton Rouge last week, have been flooded.

Last week, after leaving Baton Rouge, I went as far south as Donaldsonville, and in this entire distance, saw very little rice. Gueymard Brothers are putting in only seventy-five acres. This, however, is on new land, and they are seeding only Fortuna, Acadia, and Vintula, with a view to having good clean seed for more extensive seeding on land that has been "lying out" for three years. They are still interested in the seed rice business, and seem to realize more than ever, the importance of giving this matter careful attention.

GEORGIA

State Experiment Station, Athens and Substations (R. R. Childs). No. Report.

SOUTH CAROLINA

Pee Dee Experiment Station (Hugo Stoneberg). Generally speaking the weather the last half of April was not very favorable for early growth of crops, especially cotton. There were several cool days and only a few hot days. Highest temperatures were recorded on April 25 and 26, when the thermometer registered 88°. A light frost occured on April 19. The total rainfall was 2.2 inches. A heavy rainstorm occurred on the evening of the 28th when 1.75 inches fell in 45 minutes.

Dr. W. M. Riggs, Pres. of Clemson College, Prof. H. W. Barre, Director of Experiment Stations, Ex Governor Manning and Mr. J. E. Wanamaker visited the station on an inspection tour, on Monday April 25.

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor) The earlier wheats and oats are now heading, while barley is fully headed. The fortieth acre plats of barley treated for smut by Dr. G. M. Reed show as conclusive results as last year. All varieties in the varietal experiments for the current year were treated by the hot water method and a general examination of these plats has shown but two smutted plants, both covered smut (U. hordei). The ten plats treated with formalin show occasional plants infected with loose smut (U. nuda) and two to three times as many infected with covered smut. The ten untreated plats have a heavy infection of both loose and covered smuts.

Weather conditions have been favorable to leaf rust. Rye has in the neighborhood of a 20 percent infection. Rosen, C. I. 195, which has over 50 percent of its plants still to head may be injured by the rust, but practically all other ryes growing in the plats have passed the stage where fertilization occurs and little damage to them is expected. Wheat also is attacked by leaf rust, tho at present it is not as severe as with rye.

The precipitation for the last half of April totals 2.69 inches. The minimum temperature for the same period was 38° and the maximum 93°.

NEW YORK

Cornell University Experiment Station, Rhinebeck(Corn Investigations) (L. S. Mayer). The weather in Rhinebeck since I arrived has been the usual spring sort here, but marked by more extremes than last year. There have been several exceedingly warm days, then cold and rainy ones, with two very severe freezes that have done some serious damage to the earlier fruit trees. The weather is settling somewhat now, and we have begun discing the fall-plowed breeding field, preparatory to planting our corn experiments. I shall begin to plant just as soon as the first field is prepared, probably by the last of the week or Monday of next week, weather permitting.

For some reason quite a few of the farmers in the immediate vicinity failed to secure a sufficient supply of good sound seed corn for this year and I am having requests for seed corn.

I have been spending the rainy days in the barns, getting our supplies and equipment in shape.

Cornell University Experiment Station, Ithaca (E. H. Love). The month of April has been an unusually warm one for Ithaca and following a rather open March it has been possible to get out spring seeding much earlier than formerly. The result is that we have all of our oats and barley sown with the exception of some work dealing with inheritance of smut resistance in oats. The rod row series and plat series of both oats and barley are now coming up very well with the exception of some strains of barley which show poor germination. Out in the State six of our seven oat tests have been sown, which is earlier than we have been able to sow in any preceding year.

The wheat hybrids which were sown in the greenhouse have made an unusual growth and are now well headed. The wheat and oat varieties which were sown for further work in crossing are now heading and some crossing is being done. In connection with the oats we are using a Rustproof strain obtained from Professor Parker of Kansas and also one of our strains which seems to be fairly resistant to smut. We are crossing these with other promising strains and varieties. In connection with the wheat crosses we are attempting to make certain crosses which will make our series of species crosses fairly complete.

In addition to the regular nursery series of oats we have sown this year 600 rod rows for a method study. These 600 rod rows are all sown to the same variety and are sown in two series of 300 rows each. It is planned to make a study of these to determine the normal variability that exists in a rod row series when grown on the type of soil that we have here. This method of seeding will make it possible to handle single rod rows or plats consisting of two or more red rows.

Winter wheat and rye is making an unusually rapid growth and, in general, looks very well af this date. Rye is beginning to joint and will be heading before a great while if the warm weather continues

INDIANA

INDIANA

Indiana Agricultural Experiment Station, La Fayette (George N. Hoffer) No Report.

ILLINOIS

Cooperative Corn Rot Investigations, Bloomington (J. R. Holbert). No. Report.

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson). No Report.

MISSOURI

State Experiment Station, Columbia (L. J. Stadler). The second half of April in Missouri was predominantly wet and rather cold. Corn planting has been delayed on account of the weather and even in the extreme southern part of the State only one-third to one-half of the corn has been planted.

Prof. D. W. Frear of this department, who recently returned from a two weeks trip in southeastern Missouri, found the wheat crop there to be in rather poor condition with considerable injury from Hessian fly and leaf rust. Over the remainder of the State wheat is in fair to good condition.

Mr. Curran of the rust survey of the Office of Cereal Investigations, examined the wheat and oats on the Station field today. A small amount of leaf rust was found on most of the varieties of wheat and rye but no stem rust was detected.

IOWA

Agricultural Experiment Station, Ames (L. C. Burnett). No Report.

GREAT PLAINS AREA
(South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger) The last part of this month has been very spring like, i.e., changeable and windy, with a few showers at intervals. The weather is as a whole becomming warmer.

The first date-of-seeding plats were seeded on April 18. The milo emerged to a stand by the 28th and the remainder of the varieties one day later. The second date-of-seeding was made this morning. Thrashing seed heads of sorghums and broomcorn has progressed satisfactorily.

G. M. Rommel and C. W. Larson, Chiefs of the Animal Husbandry and Dairy Divisions, respectively, of the Bureau of Animal Industry, visited and inspected the Field Stations on April 25 and took up the matter of starting a live stock department at this station. Dean Knight and James A. Wilson of the Oklahoma Experiment Station were representatives of the state in the live stock proposition.

Precipitation for the last half of April has been 0.20 inches, which came in several small showers. The minimum temperature was 29° on April 17, and the maximum was 94° on the 24th.

In another two weeks the season should be well under way.

KANSAS

Fort Hays Branch Station (A. F. Swanson). We are having favorable growing weather and all spring crops are making good growth. Oats and barley which appeared thin and injured from the blowing and freezing weather have tillered and revived to a remarkable degree. This is particularly true of the Station's commercial fields which were seeded to barley after the wheat had blown out. However, the oats and barley seeded on February 17 in the date-of-seeding experiment will be permanently injured as they had made too much growth at the time the heavy freeze of March 28 occurred.

Wheat which survived the spring blowing is making good progress and has jointed. I am inclined to believe that where the stand was well established on fallow ground there is a little too much growth for this time of the season. However if we do not have much rain in the next ten days the vigorous growth will be somewhat checked.

In the experiment using the common drill versus the lister drill there is no apparent difference in survival or manner of growth of winter wheat, except that the heavy freeze killed a part of the stand in the five-peck rate in both methods of seeding. The five-peck stand was exceedingly thick early in the spring and it is probable that the vitality of the plants was less in this rate than in the thinner rate of seeding.

It is extimated that 1100 people were present at the Cattlemen's "Round Up" Day at the station on April 30, at which time the report of progress of the livestock experiments was made public. One of the main problems involved was the feeding value of straw and of silage as the basis of a winter ration for mature cows and the best utilization of these by-products of the farm. Six lots of 10 cows each were used and fed as follows; with daily gains or losses in weight in pounds for a 120-day feeding period:

Lot 1 Wheat straw only Daily loss .02 lbs.
Lot 2 Wheat straw and 2 pounds of cottonseed cake Daily gain .5 lbs.
Lot 3 Wheat straw, 30 lbs Cottonseed cake. Daily gain .37 lbs.
Lot 4 Wheat straw, 30 lbs of sorghum silage, 2 lbs of cottonseed cake daily. Daily gain 1.08 lbs.
Lot 5 Sorghum silage only. Loss .23 lbs. daily.
Lot 6 30 lbs of sorghum silage, 2 lbs of cottonseed cake. Daily loss .013 lbs.

More favorable results from silage would have been obtained had the quality been better. The straw was of good quality.

COLORADO

Akron Experiment Farm, Akron (F. S. Coffman). Weather conditions during the first half of March, have been far more wintery than during any similar period during the two previous months. Snow fell on five days during the period. The lowest temperature for the half-month was 15 degrees, while

the highest temperature reached was 77 degrees. The most severe blizzard of the winter was experienced March 15. The storm started with a slow misting rain on the afternoon of March 14. The storm continued throughout the night; the wind and rainfall gradually becoming worse. During the morning of March 15, the rain changed to snow and the blizzard continued well into the night of March 15. While little damage resulted from the storm at Akron Field Station, considerable damage resulted in this part of the state; buildings in some instances were blown down, windows were blown in and telephone wires and fences were blown down. While the storm did considerable damage to property in the section, the result was very beneficial to crops. A total of over 1.25 inches of precipitation was received during the storm. At the present time the ground is covered with snow, ranging in depth from two inches to five feet. The snow drifted very badly, due to the high winds which accompanied the storm.

Weather conditions during the past two weeks have been rather unseasonable. This has resulted in little field work having been accomplished. Winter wheat has made a very marked growth in spite of the unfavorable weather conditions, and at the present time the condition of the crop is possibly a trifle above the normal condition at this time of the season..

Winter wheat field plats at Akron Field Station, are looking well, especially in the varietal experiment. In many of the plats in the rate-and-date-of-seeding experiment the stands are very poor, due to the unfavorable conditions at seeding time. The winter wheat nursery looks especially good at this time. During the latter part of March, 150 field plats of spring grain were sown in the Cereal project. This grain had started to emerge before the storm of March 15.

During the first part of April, a total of over 100 additional plats of spring grain was sown. Most of these plats are of selections from the different varieties. Due to the unfavorable weather conditions the seeding of nursery grain has not as yet been completed. The spring wheat section of the nursery, including the rust experiment, had been sown before the storm of March 15.

April 16-30 - Weather conditions during the last half of April were very unseasonable. The maximum temperature for the period was 79 degrees on April 24, while the minimum temperature was 17 degrees April 17. Temperatures as low as freezing were recorded ten times during the half month. Four precipitations were recorded during the last 15 days of April. The greatest amount recorded for one 24 hour period was 1.29 inches on April 16. The total precipitation for the half month was over 1.66 inches. This has put the soil in ideal condition as to moisture and with the gradually riseing temperatures plant growth has been very rapid during the last few days.

The condition of the winter wheat in this section is at least normal at this time. The severe weather during the middle of the month did not damage the crop to any extent. In an increase field of Kenred winter wheat on the station, the wheat already is from ten inches to a foot in height. Winter rye in the varietal experiment plats is nearly "knee high".

A total of more than 250 plats of spring cereal grain were sown at Akron this spring. In nearly all of these plats excellent stands have been produced. The seeding of spring nursery rod-rows was completed during the

last half of April. The spring nursery this year will contain approximately 1,000 rows. This grain has started to emerge.

The first planting of corn in the varietal-date experiment was made April 13. Eight varieties were included in this experiment this year. Due to the cold weather this corn has not as yet emerged and it is very doubtful whether any considerable amount of it will ever germinate.

NORTH DAKOTA

State Experiment Station, Agricultural College, Fargo (W. E. Brentzell) No Report.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.) During the last half of April we have had good rains so that everything should grow well as soon as we have a little warm weather.

Winter wheat, which was sown Aug. 30, 1920, and made a good start in the fall is completely winter-killed.

Oats and barley varietal plats were sown April 26.

Flax sown in the date-of-seeding experiment April 15 and wheat in the varietal plats sown April 16 are just emerging.

Maximum temperature for the last half of April was 75°, recorded April 20; recorded April 17. Precipitation 2.21 inches.

Dickinson Substation, Dickinson (Ralph W. Smith) The month of April has been somewhat dry until the night of the 29th when a storm of rain and snow totaling 0.57 inch supplied enough moisture to insure even germination of crops and improved crop prospects generally. The total precipitation for the month was 1.02 inches which was about the same as that for March.

The varietal plats have all been sown except flax and proso varieties and the nursery is all sown except head rows and the rust nursery. The wheat varieties are emerging and a few days of warm weather following the rain should bring up all crops, within a few days.

Seeding is well advanced in this section and another week of good weather should see the bulk of the small grain sown.

The varietal plats of winter rye are in good condition and winter wheat which is partly winter-killed will improve in condition since the rain.

MONTANA

Judith Basin Substation, Moccasin, Mont. (Ralph W. May). All of the spring grain except flax and corn under the Cereal Project has been sown during the last ten days (April 18027). The plat varietal tests of spring wheat, oats, and barley were sown April 18 and 19. The nursery tests of these grains were sown April 21, 22, and 23. The first planting of corn in the experiment on Effect of Date of Planting on Maturity was made April 27.

Thirty-one varieties of spring wheat, seventeen varieties of oats, and twelve varieties of barley were sown in the varietal plats. In the nursery of these grains there are about 325 one-rod and eitht-rod rows in addition to about 250 head-rows.

None of the flax has been sown yet because the weather has been too cool but if weather conditions permit we will sow the flax next week.

We have had very little precipitation during the last two weeks but it has been very cloudy and cool.

There have been several reports of injury to winter wheat by a wireworm but an investigation does not show any great amount of damage by the worms. The worms may become more active, however, when the weather warms up.

Director F. B. Linfield of the Montana Experiment Station visited here April 23.

IDAHO

Aberdeen Substation, Aberdeen (L. C. Aicher). No Report.

OREGON

Sherman County Branch Station, Moro (D. E. Stephens). No Report.

CALIFORNIA

Rice Field Station, Biggs (J. W. Jones). The weather during the month of April has been cool. The maximum temperature was 89 degrees, on April 29; the minimum temperature was 28.5 degrees on April 14. This low temperature did considerable damage to the fruit industry in the Sacramento and San Joaquin valleys. The precipitation for April was .55 of an inch. The total evaporation for April was 5.243 inches.

A strong north wind has been blowing the past six days, which no doubt will reduce the yield of late sown barley and probably that of the fall sown wheat.

While April has not been a good growing month it has been satisfactory for field work. Practically all the rice that stood out in the shock during the winter has been threshed during April. Considerable rice has been sown and some fields are now being irrigated.

Field work began at the station April 4, seeding April 16, and we finished with the first irrigation of the, Soil-Heat and Irrigation, Irrigation, Varietal, Increase Plats, and the Nursery, today.

There is a big reduction in the acreage to be sown to rice between Gridley and Nelson, on the east side of the Sacramento River, this spring, and while I have not visited the west side of the Sacramento River there will, no doubt, be a large reduction in the acreage sown there. My opinion is that there will probably be about 100,000 acres sown to rice in California this Spring.

The rice market is dull, with no demand for the damaged rice that was threshed this spring.

Plant Introduction Station, Chico (W. E. Florell) There has been a great deal of windy weather during the past two weeks which has resulted in considerable injury to the growing grains. All fall-sown fields of wheat are more or less spotted with drought-injured areas. Although the winds have made a pretty heavy draught on the soil moisture, the real trouble seems to be with the root development of the plants. A great deal of the fall-sown grain shows

very poorly developed root systems. Winter-sown grains also show the effects of drought but rains would put them in good condition again. Fifteen hundreths of an inch of rain fell yesterday.

All barley varieties are fully headed with the Calif. Mariout and several others beginning to ripen. All but a few varieties in the varietal experiments with oats and wheat are fully headed. While quite a number of wheat varieties in the Classification Nursery are fully headed, most of them have just begun heading.

The wheat-crossing program is well under way. It will not be possible to make all the crosses desired on account of the difference in time of heading in a few varieties.

Agricultural Experiment Station, Berkely, (W. W. Mackie). Little rain has fallen in California since the middle of February, causing extreme drought in the San Joaquin and many southern California grain districts. The rainfall which was above normal early in the year has now fallen below normal. Only irrigated grain will make normal crops in the southern half of the San Joaquin Valley.

Cereal diseases, which appeared in great abundance in the early part of the year, have been checked by the prevailing drought. Barley Scald (Rhynchosporium) has caused damage to all early-sown barley observed in field varieties in the Sacramento Valley but those varieties sown late show but little attack. Late sown barleys are very short and will make light crops only.

Complaints from grain growers state that the grain fields are making poorer showing than for years, as much of the grain is yellow, lacks vigor, and has not tillered as well as usual. Cool weather is preserving the fields in a green state in many areas where drought otherwise would show great injury.

Leaf rust has appeared in the plots at Davis. The rust experiment plots are being irrigated in order to induce stem rust attack. Many of the hybrids sown in January are in head.

The Grain Growers Conference will be held at the University Farm at Davis May 17 to 19 with the following program discussion by, Prof. W. W. Mackie: "Cereal Diseases and Their Control," including field examination of the breeding and seed treatment work for disease control.

Several other discussions on cereal diseases will be given by officers of the California Experiment Station.

C E R E A L C O U R I E R

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 May 20, 1921 No. 11
Personnel (May 11-20) and Field Station (May 1-15) Issue.

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PERSONNEL ITEMS

Floyd G. Anderson has been appointed as Field Assistant to assist with the barberry eradication campaign in Illinois, beginning June 15. He served in the same capacity during the summer and fall of 1920.

Harvey E. Brewbaker, who worked in the barberry eradication campaign in Illinois last summer, has again been appointed for barberry eradication in Illinois, beginning June 15.

Raymond Bulger has been appointed Field Assistant for barberry eradication in South Dakota and will begin work July 1.

Henry S. Conard has been appointed Field Assistant, beginning June 10, to work in the barberry eradication campaign in Nebraska.

Ross D. Davies has been appointed Field Assistant, effective July 1, for barberry eradication in South Dakota.

Leo J. Federer has been appointed Field Assistant, effective July 1, for duty in Wisconsin in connection with the barberry eradication campaign. This will make Mr. Federer's third summer in this work, he having worked in the summers of 1919 and 1920.

George L. Fick has been appointed Field Assistant effective July 1, to assist in the barberry eradication campaign in Michigan.

Rudolph S. Frigstad was appointed Field Assistant, effective May 16, to assist in the barberry eradication campaign in North Dakota.

William B. Gass has been appointed Field Assistant for duty in barberry eradication in North Dakota beginning July 1.

John F. Holmes' appointment, reported in the Cereal Courier for March 31, has been revoked, he having accepted another position.

James T. Jaques was appointed Field Assistant, effective May 16, for duty in the barberry eradication campaign in Wisconsin.

Frank J. Kohn has been appointed Field Assistant to assist in the barberry eradication campaign in Wisconsin, beginning July 1.

William A. Kurtz has been appointed Field Assistant in barberry eradication in South Dakota, beginning July 1. Mr. Kurtz assisted in barberry eradication last summer.

Friends of Carl Kurtzweil, formerly assistant in rust investigations, will regret to learn of his death. He died on May 16 from a complication of diseases of the heart, lungs, and spleen.

Guy A. Larson has been appointed Field Assistant effective July 1 for duty in barberry eradication in South Dakota.

Dr. E. B. Mains, agent in this office stationed at Purdue University Agricultural Experiment Station, LaFayette, Indiana, arrived in Washington on May 17. He is spending a few days here for the purpose of taking notes at Arlington Farm, Virginia, on varietal susceptibility of wheat, barley, and rye to leaf rusts. He will visit Raleigh, North Carolina, and Blacksburg, Virginia, to make observations on leaf rust of wheat, before returning to LaFayette.

Theodore C. Meldahl has been appointed, effective July 1, as Field Assistant in barberry eradication for duty in North Dakota.

Wilfred D. Mills has been appointed Field Assistant, effective July 1, to assist in barberry eradication in Michigan.

Marie E. Norman, who has been serving as stenographer at Columbus, Ohio, in connection with the barberry eradication campaign since August 1, 1919, resigned April 5.

William R. Perrin has been appointed Field Assistant, effective July 1, to assist in barberry eradication in Nebraska.

Joseph H. Pleck has been appointed Field Assistant for duty in barberry eradication in Wisconsin and will begin work July 1.

Fred D. Richey returned to the office on May 19 from Burdette, Arkansas, where he has been during the past month planting experimental corn plats.

Fred W. Roewekamp has been appointed Field Assistant, effective July 1, for barberry eradication in Wisconsin.

Leon G. Samsel has been appointed Field Assistant in barberry eradication, for duty in Nebraska beginning June 10.

William J. Sando has been appointed, effective June 1, to assist in conducting cereal experiments at Arlington Farm, Virginia.

Jerome P. Seaton has been appointed Field Assistant to assist this summer with cereal experiments at Arlington Farm, Virginia, and will begin work June 16.

Albert S. Severson has been appointed, effective June 15, as Field Assistant in the barberry eradication campaign in North Dakota.

Forrest C. Strong has been appointed Field Assistant in barberry eradication for duty in Michigan beginning July 1.

Matthew E. Tindall has been appointed Field Assistant for duty, beginning July 1, in the barberry eradication campaign in Minnesota.

Paul C. Underwood has been appointed Field Assistant in connection with the barberry eradication campaign in South Dakota, beginning July 1.

Archie M. Waldie has been appointed Field Assistant, effective June 1, to assist in barberry eradication in North Dakota.

Bert Wick has been appointed Field Assistant, effective July 1, to assist in barberry eradication in North Dakota.

Allen P. Willis has been appointed Field Assistant, effective June 10, to assist with cereal experiments at Arlington Farm, Virginia.

VISITORS

Director J. F. Duggar, of the Alabama Agricultural Experiment Station, was an office visitor on May 19.

MANUSCRIPTS AND PUBLICATIONS

Manuscript of "Classification of American Wheat Varieties," by J. Allen Clark, John H. Martin, and Carleton R. Ball, was transmitted on May 13 for publication.

FIELD STATION CONDITION AND PROGRESS

HUMID EASTERN STATES (South to North)

LOUISIANA

Crowley Rice Station, Crowley (J. Mitchell Jenkins). No report.

GEORGIA

State Experiment Station, Athens, and Substations (R. R. Childs). No report.

SOUTH CAROLINA

Pee Dee Experiment Station (Hugo Stoneberg). Generally speaking, the weather has not been favorable for the rapid advancement of crops. The first week in May was cool and cloudy. The condition of the cotton crop is bad in this section due to adverse weather conditions since planting. Corn is good; height about 8 inches.

The precipitation recorded is as follows: .4 inch on the 1st, .02 inch on the 4th, .35 inch on the 10th, .25 inch on the 11th, .5 inch on the 12th, 2.95 inches on the 13th, .45 inch on the 14th, and 1.2 inches on the 15th a total of 6.12 inches.

The peanut and sweet potato experiments have been planted during the past two weeks. The rice selections will be planted as soon as the weather settles.

Professor Blackwell from Clemson College visited the Station on Saturday, May 7.

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor). No report.

NEW YORK

Cornell University Experiment Station, Rhinebeck (Corn Investigations) (L. S. Mayer). The disking and harrowing of the experimental plats were pushed as much as the usual April weather would permit. The varietal and observational field (about 3-1/2 acres) was planted April 29 and 30.

The breeding field of U. S. Sel. No. 193 (about 6 acres) was planted May 4 and May 7, a heavy rain causing the intervening two-day delay.

Two smaller increase plats of the Leaming and Burr-Leaming double crossed dent corns of the Connecticut State Station were planted May 2 and 3. One of these double crosses, the seed of which was sent to us for trial last year by Dr. D. F. Jones, showed so much promise as a silage corn that I deemed it advisable to secure this year an increased supply of seed for further use.

All plantings have germinated well in spite of the cold weather. The past few days and nights have been much warmer and the corn has come on more rapidly. Plants in the varietal plat showed above ground May 12, and in the two increase plats May 14. The breeding field ought to be up within a day or two.

At present, the outlook points toward a successful season. Labor is not so hard to secure this year and the farm cooperation is much better.

Cornell University Experiment Station, Ithaca (H. H. Love). No report.

OHIO

College of Agriculture of Ohio State University, Columbus (Barberry Eradication) (John W. Baringer). Since I returned from the conference of barberry leaders April 8 and 9 at LaFayette, Ind., we have been having remarkable success in eliminating barberries from the territory which was covered last year in the farm-to-farm survey. The State Department of Agriculture has furnished a deputy inspector, with police powers, during the major portion of the past three weeks. As a result of our cleaning up efforts we have been able to eliminate all of the barberries from six of the seven counties covered by the farm-to-farm survey, with the exception of four locations. The four instances just mentioned were cases in which legal enforcement was necessary. The necessary notices were served by the deputy inspector and the time-limit on them is expiring rapidly. I have been delighted with the assistance rendered to date by the State Department.

I recently visited the area of escaped barberries at Lewisburg, Preble County. With the exception of about forty large barberries on one man's farm, that area was supposed to have been cleaned up last fall. I found that a few big ones which had escaped notice heretofore in the supposedly clean area were heavily rusted. In addition I found that thousands of seedlings have come up from seeds which were scattered last season before we discovered the location.

It is going to be a proposition of getting down on one's hands and knees in some sections in order to find them. That area will require constant watching for a period of at least five years. The seedlings were also heavily rusted. At last I have triumphed in my negotiations with the Dayton City Park Commission and it is with pleasure that I am able to report all common barberries removed from Dayton city parks. In addition I am able to report that 75 per cent of the common barberries have been removed from John Patterson's Hills and Dales Park south of Dayton, and the remainder are coming out as fast as his men can get to them.

INDIANA

Purdue University Agricultural Experiment Station, LaFayette (Barberry Eradication) (R. J. Hosmer). During the month of April most of the plantings remaining in Indiana were checked up and the names of those few who had failed to remove their bushes were turned over to the State Entomologist, who has charge of enforcing the law. About the middle of the month a rural survey was started in Randolph County but due to the good work of a former County Agent most of the plantings in the County had already been removed so that very few plantings have been found.

A total of 8 plantings containing 100 bushes was found during the month, 2 of which contained a small number of escaped bushes. Only one infected barberry was found, a single aecium being located in Allen County near Ft. Wayne on April 20.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication) (W. F. Reddy). Some field work was accomplished during April by the leader when weather conditions permitted. In the original survey, 72 barberries were found and removed from 31 city properties and 25 from 6 rural properties. In the resurvey, 34 bushes were removed from 23 properties.

The appointment of the first field assistant in Michigan was made effective May 1. During the past summer the farm-to-farm survey was completed in Monroe, Lenawee, Hillsdale, and Branch counties. Work was begun in St. Joseph County with an aim of completing the southern tier of counties. Since beginning the campaign this season, the weather has been ideal for travel. We have traveled about 285 miles in surveying the territory covered to date. Bushes numbering 385 have been found and removed. Only 19 of these bushes were taken from farm dooryards, the balance being escaped bushes in woodlots or along fence rows in close proximity to rye, wheat, and oat fields. We are confident that infected specimens submitted will bear out the statement that the bushes found bear the heaviest infections of any plantings found in our State. An excellent spirit of cooperation is manifested by the farmers, and they are ready to devote their time and teams toward eradication, but we do feel that our publicity has failed to give them confidence in their ability to identify the bushes. They are acquainted with the relation of a bush called barberry and black stem rust, but are keenly surprised when the bush is found on their premises. Already we have noticed results from placing bushes for demonstration in cities, villages, and places in general where farmers congregate. At the principal crossroads, we place posters and beneath each poster we nail a branch of the barberry bush. Right now we are sorely in need of cuts which will show the chief characteristics of the bush and after these are placed in the farm papers I am certain that more eradication work will be undertaken by the farmers.

ILLINOIS

State Entomology Building, Urbana (Barberry Eradication) (L. R. Tehon). The month of April started out with an abundance of sunshine and the promise of excellent roads, - the kind of wine that arouses to the hunt of the barberry. Dr. E. R. Schulz was appointed for field work, and the farm-to-farm survey of McHenry County was begun.

A snowstorm about the middle of the month and incessant rains during the rest of the month slowed up the work somewhat and added to the mileage cost of the survey but a total of over 1200 miles was traveled. Mr. W. S. Collins was placed in the field on April 14. Three-fourths of the county was carefully surveyed, showing 39 plantings of barberry, 10 of which were escapes, and 202 bushes, of which 25 were escapes. Seventeen of the plantings, or 97 bushes, have already been removed. By means of the resurvey, 11 plantings, containing about 81 bushes, and 62 sprouts have been cleaned up. These were distributed rather evenly through Boone, Winnebago, Stephenson, and McHenry Counties.

In Winnebago County, one possessor of barberry, through the action of the State Department of Agriculture, was brought into court and fined $25.00 and costs for failure to remove the barberry.

The State leader was in attendance at the meeting of the Illinois State Academy of Science on April 29 and 30 at Carbondale, Illinois, and finds that the sentiment among the scientists of the State is very strongly in favor of the eradication of the barberry.

Reporting progress on resurvey at Freeport, Illinois: Twenty properties were visited and resurveyed today; traveled 45 miles over bad roads. We have had sunshine and plenty of wind today, so hope for good roads soon. Very few sprouts have appeared so far. In one case the farmer had just gone over the ground for sprouts and cleaned them up. In another, the farmer was digging sprouts. He had heard that I was in the neighborhood. There seems to be a ver good spirit in this county. Several farmers took a liking to one of the field men of last year, and asked about him.

Cooperative Corn Rot Investigations, Bloomington (J. R. Holbert). No report.

WISCONSIN

Department of Agriculture, State Capitol, Madison (Barberry Eradication) (Noel F. Thompson). Some field work has been accomplished near Madison on occasional nice days and some leads have been followed up. In original survey, 73 bushes have been found on 14 properties, and 54 were removed from 10 properties. In resurvey, 14 bushes and 104 sprouts were removed.

Since May 2 we have found rust on practically all barberries examined in Dane, Rock, Jefferson, Walworth, Racine, and Kenosha Counties. At present (May 15) the aecia are just about mature and a few of them have begun shedding spores. We have not been able to detect any stem rust yet but undoubtedly will do so within a week. From the number of rust reports in Walworth, Racine, and Kenosha Counties it might appear that there were still a good many barberries there. Mr. Clark and I resurveyed those counties last week but so far as we know there are only two properties remaining outside of Lake Geneva with bar berries on them. One of these is a hedge in a fence of boulders near Burlingto Most of the stones have been moved and the bushes pretty well grubbed out, but there are a good many sprouts. The present tenant is very much interested and

promised to finish the job of eradication immediately. He said he would get several barrels of waste engine oil from the road crew and drench the whole hedge with it. Judging by Mr. Hegan's work this should nearly eradicate the few remaining bushes.

The other property is near Caledonia in the northeast part of Racine County. Here again it is the remains of a big hedge on the property of Mr. Smith who is, I believe, the uncle of Mr. Melander in Minnesota. Mr. Smith has just bought a grub hoe and promised to grub out the stumps the following day, so it is probably out by this time.

I have three men working with me this week and we expect to almost complet Rock County by the end of the month.

Agricultural Experiment Station, Madison (J. G. Dickson). No report.

MISSOURI

State Experiment Station, Columbia (L. J. Stadler). During the first half of May the prevailing weather in Missouri was cloudy. The rainfall during the last month has been much above normal and farm work is in general about two weeks behind over the State as a whole.

Wheat in the southern half of the State still shows the effects of the early spring freezes with a considerable amount of leaf rust in Southeastern Missouri and Hessian fly injury in Southwestern Missouri.

After the early freezes a considerable portion of the oat crop was reseeded. The condition of the oat crop for the State as a whole is about average at this time. Corn planting has been delayed by wet weather.

We are preparing to plant about three acres of corn this year in connection with genetic investigations. Dr. W. H. Eyster of the Botany Department has been assigned to this department for the summer and will conduct the major portion of this work.

IOWA

Iowa State College, Ames (Barberry Eradication) (R. H. Porter). The barberry campaign for April, 1921, in Iowa has been carried on principally by two field men. Calhoun County has been half surveyed and Woodbury County, which was partially surveyed last year, has been almost completed. Very few plantings were found during this month, two in Calhoun County being the only ones. However, two plantings consisting of 4,099 bushes were removed in Crawford County. These plantings were found last year at a time when it was too late to remove them. The weather has been very good for this time of the year, only three or four days having been unfavorable for driving in the country.

Agricultural Experiment Station, Ames (L. C. Burnett). No report.

MINNESOTA

College of Agriculture, University Farm, St. Paul (Barberry Eradication) (Leonard W. Melander). One squad of barberry scouts began field work on April 1 in Faribault County. They completed the farm-to-farm survey of the unsurveyed portion of this county in about 10 days and then began the survey in Watonwan County. Conditions for rural survey work have been ideal. The roads were as good as at any time of year. Dense foliage was not present to prevent a very careful survey. In midsummer dense groves are difficult to scout.

The search for stem rust has been carried on extensively. Rust on common barberry was reported for the first time on April 25 from Jackson County and, on the following day, was found in Watonwan County. No uredinial infections have been found in the field by the scouts in Minnesota.

During the month, 21 bushes were located on 6 properties, 2 of which contained escaped bushes. On the resurvey, 363 bushes and 214 sprouts were removed. Four counties have been resurveyed for sprouts. This resurvey showed that constant watch of all old plantings is necessary. Sprouts were found coming up after the bushes and roots had been dug as many as three times before These cases occurred where the digging was very difficult.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger). The first half of May appears to have been rather hard on wheat prospects for this part of the world. At the beginning of May the wheat was very rank or far advanced for this time of the year. We have had little rain and the heads which are appearing are very short and have but few fertile spikelets. The rain of last night and this morning should help matters some, and should the wheat fill well it has a chance to make between 6 and 10 bushels.

Plants in the second date-of-seeding plats emerged to stands on May 12 and 13. The third date will be seeded Monday, May 16, should the weather permit. Two fields of increase kafir were seeded this week, one with Dawn and the other with Sunrise kafir.

Farmers are going to put in a lot of row crops, judging from the quantity of sorghum seed the Station is selling.

The maximum temperature for the first part of May was 89° on the 13th, and the minimum was 36° on the 3rd. The precipitation to date has been 1.33 inches.

KANSAS

State Experiment Station, Manhattan (John H. Parker). No report.

Fort Hays Branch Station, Hays (A. F. Swanson). During the last 15 days we have had 1.6 inches of rain, which has been sufficient to keep the crops growing in good condition. This amount of rainfall is somewhat below normal. We therefore are not getting an excessive growth of straw on fallow land. With a few more good rains between now and harvest, the small grain experiments on the Cereal Project should come through successfully.

Kansas rye and Abuzzi rye were headed May 5. Rosen rye was about 4 days later. Nebraska No. 28 soft winter wheat began heading May 13.

Barley and oats are making good growth.

The varietal corn was planted May 13 and the first rate of seeding Dawn kafir and milo on May 14. Four dates of seeding Dawn kafir will be run this year. The varietal seeding of sorghums will be begun May 20 as the ground is ready and the weather is warm enough for seeding.

Professors Grimes and Throckmorton of the Kansas State Agricultural College with fifteen members of their classes were Station visitors on May 21

and 22. In the party were three students from Africa and one from China who were much interested in the experimental work at Hays and methods of farming in western Kansas.

COLORADO

Agricultural College, Fort Collins (Barberry Eradication) (John R. Fitzsimmons). The first farm-to-farm survey work of the season was started in this State early this month. It will be continued during May in the counties of Larimer and Fremont where many escaped bushes have been reported. We wish to clean up these areas before there is danger of rust infection on the barberry. We are keeping a close watch on the resurveyed area in northern Colorado from which thousands of bushes have been removed. This is the portion of the State in which most of the wheat is grown. To date we have not succeeded in finding rust either on the grains or the common barberry. We have an Extension Bulletin coming out this month on the eradication of the common barberry and the cereal diseases. These bulletins will reach many of the farmers of the State and will also serve as explanatory material in the field.

NEBRASKA

College of Agriculture of the University of Nebraska, Lincoln (Barberry Eradication) (A. F. Thiel). A total number of 1689 barberry sprouts was found and destroyed during the month of April. Most of these were found in towns.

Rust on barberry was first found at Blair, Nebr., on April 26. Since that time rust could be found on barberries whenever the bushes or sprouts were found. The rust infection in most cases was very light. Sprouts in the country in Washington County were very heavily rusted.

Due to cold weather conditions no mature aecia were found.

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication) (Ralph U. Cotter). A farm-to-farm survey has been in progress during the favorable days of February, March, and April in the south-central portion of Albany and the southwestern portion of Laramie Counties. Very little shrubbery of any sort and no barberry bushes have been found on farms or ranches in the area covered.

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication) (H. C. Gilbert). Field work was begun early in May. Rains and car trouble have delayed the revisiting work which we are doing so that it will take about one week more to complete the revisiting in the area where our farm-to-farm survey is completed. The first rust was found May 5. Since that date we have found rust on every planting where sprouts or bushes remained, but in no case was the rust abundant. The first mature aecia were found south of Humbolt on May 13. Duplicate reports of infection are being sent to you. So far we have found no negative data except in locations of course where the barberries were completely eradicated.

NORTH DAKOTA

State Experiment Station, Agricultural College, Fargo (George C. Mayoue). No report.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.). The first half of May has been generally cool and showery.

Wheat varieties sown April 16, and oat and barley varieties sown April 26 came up with good stands and are growing well.

The wheat for the study of biologic forms of rust was sown May 6 and has emerged with good stands.

Flax varietal and rate-of-seeding plats were sown May 7 and are just emerging.

Mr. A. C. Dillman arrived in Mandan from Washington, D. C., on May 4.

Showers somewhat delayed and interfered with the seeding of the flax nurseries. Mr. Dillman and I with the Columbia planter seeded 448 17-foot rows in 3-1/2 hours on May 13, which is at the average rate of 128 rows per hour. On May 14 we sowed 252 17-foot rows in 1-3/4 hours, which is at the average rate of 144 rows per hour. Also on May 14 we sowed 272 5-foot rows in 2 hours, and, on May 16, 544 5-foot rows in 4 hours, which is an average rate of 136 rows per hour. We improved our method as we went along so that in the last half hour we sowed 100 5-foot rows.

Maximum temperature for the first half of May was 60° recorded May 6; minimum, 27° recorded May 2 and 3; precipitation .91 of an inch. A temperature of 28° recorded May 13 slightly nipped alfalfa but apparently did little or no damage even to plums, many of which were in bloom at that time. The plums are just in full bloom now and leaves are just coming out on the trees.

Dickinson Substation, Dickinson (Ralph W. Smith). Showers have occurred every day during the past week, making a total of about 0.85 inch during that time. These rains, following the rain of 0.57 inch on April 29, make the crop prospects very favorable at this time. The weather has been cool this week with a minimum of 28° on May 13.

During the first week of May severe southeast winds blew nearly every day, doing some slight damage by drifting the soil in sandy localities. Since the recent rain no further damage has been done in that line.

The seeding of cereal crops at the Substation is completed, except flax and proso millet. Fairly good stands were obtained with all cereal varieties in plats and nursery. The farmers in this locality are nearly done seeding small grain and the planting of corn and potatoes is in progress.

The acreage of durum wheat in this locality will be relatively large. There will be a large increase in the acreage of sweet clover in this and other counties of the State. Nearly 5000 pounds has been distributed from the Substation. The acreage of corn in this section was larger than usual last year and will probably be increased this year. This will insure better crops of small grain when sown on corn land.

Agricultural College, Agricultural College (Barberry Eradication) (George C. Mayoue). The State leader attended the conference of barberry eradication leaders on April 11 and 12 at University Farm, St. Paul, Minn. Original and resurvey work in the farm-to-farm survey was conducted during the latter part of the month. Nine bushes were removed from 2 properties and 26 sprouts were found and removed. Considerable publicity was carried on in the rural and town schools and community club meetings.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May). The precipitation for the first twelve days of May was 2.33 inches. Of this amount 1.45 inches was recorded on the 8th. Most of the precipitation has been in the form of rain but there have been several snow flurries. A snow which fell last night amounted to .01 inch precipitation. The soil now contains an abundance of moisture but it is doubtful that the moisture has descended far into the subsoil. There was no runoff even while the rainfall was heaviest.

All of the fall-sown wheat which withstood the dry fall and winter will now come through in fine shape. There have been several reports of poor stands of fall-sown wheat. The farmers so reporting are expecting to thicken their stand by seeding spring wheat in the fall-sown wheat.

In the winter wheat experiments under the Cereal Project there are in most instances very poor stands in the varietal experiments and in the ordinary drill sowings of the furrow drill tests. On the other hand the stands in the nursery and in the furrow drill sowings are good.

The flax nursery was sown May 3 and the flax varieties in plats were sown May 5 but none of it has yet emerged. All of the other spring grain which was reported as sown in the last report has emerged with good stands.

State College of Agriculture and Mechanic Arts, Bozeman (Barberry Eradication) (H. E. Morris). No report.

WESTERN BASIN AND COAST AREAS
(South to North and West)

IDAHO

Aberdeen Substation, Aberdeen (L. C. Aicher). No report.

OREGON

Sherman County Branch Station, Moro (D. E. Stephens). No report.

CALIFORNIA

Rice Field Station, Biggs (J. W. Jones). There is quite a large amount of spring thrashed rice in California and no market for it at present. Buyers say this spring thrashed rice is worth from 40 to 75 cents per hundred, while fall thrashed rice (No. 1) is worth about $1.75 to $2.00 per hundred. Some growers have burned their crops to clear the land for spring planting.

The weather is warm at present, and rice that has been irrigated is sprouting nicely. We finished our second irrigation on May 13, and some of the rice is starting to emerge.

Plant Introduction Station, Chico (V. H. Florell). No report.

Agricultural Experiment Station, Berkeley (W. W. Mackie). No report.

Agricultural Experiment Station, Davis (F. N. Briggs). My plots here at Davis look very well considering the backward season that we have had. The earliest spring wheats are well along toward maturity and judging from them I have good smut infection in the wheat but the barley smut failed to develop again this year.

The winter wheats have not begun to head, so I am afraid that it will be difficult to secure the smut-resistant crosses that we want. I have cut back the Early Baart and Federation wheats, hoping that they will head again so that the crosses can be made.

I spent two very enjoyable and profitable days in the field last week with Dr. Johnson and Prof. Mackie.

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C E R E A L C O U R I E R

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 MAY 31, 1921 No. 12
Personnel (May 21-31) Issue.

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PERSONNEL ITEMS.

Donald B. Anderson has been appointed Field Assistant, effective July 1, to assist in the barberry eradication campaign in Ohio.

Marshall A. Boyd has been appointed Field Assistant, for barberry eradication in Iowa, beginning July 1.

Ralph E. Curtiss has been appointed Field Assistant, for barberry eradication in Illinois, beginning July 1. This will be Mr. Curtiss' third season in this work, he having served during the summers of 1919 and 1920.

Raymond A. Dobbins has been appointed Field Assistant in barberry eradication for duty in Ohio beginning July 1.

Donald G. Fletcher has been appointed Field Assistant for duty in the barberry eradication campaign in Minnesota, beginning July 1.

Edward F. Gaines, assistant professor of farm crops at the Washington State College of Agriculture, who has been pursuing post graduate study at the Bussey Institute, Harvard University, has been reappointed Agent effective July 1, to conduct cooperative wheat-breeding experiments, with particular reference to developing smut-resistant varieties.

Dr. G. N. Hoffer, agent in this office stationed at Purdue University Agricultural Experiment Station, was in Washington May 23 to 28 in connection with the preparation of a manuscript for publication.

Sylvester S. Humphrey has been appointed Field Assistant, for duty in the barberry eradication campaign in Ohio, and will begin work July 1.

Elmer C. Loy has been appointed, effective June 1, as Field Assistant for barberry eradication in Iowa.

Dr. E. B. Mains, who arrived in Washington on May 17 to take notes on leaf rusts at Arlington Farm, left on May 23 for Blacksburg, Virginia, and Knoxville, Tennessee, where he will take notes on leaf rust of wheat.

Garret L. Jordan has been appointed Field Assistant, effective July 1, to assist in barberry eradication in Indiana.

Hale W. Manuel has been appointed Field Assistant, effective July 1, for barberry eradication in Minnesota.

Leslie C. Meredith has been appointed Unskilled Laborer to assist with cereal experiments at the Plant Introduction Station, Chico, California.

Glenn E. Paxton has been appointed Field Assistant, effective June 1, to assist in eradicating barberry in Colorado.

Harmon A. Runnels has been appointed Field Assistant, effective July 1, to assist in barberry eradication in Ohio.

Hugh S. Smith, who has been at Fargo, North Dakota, during the past two months as disbursing agent in connection with the $2,000,000.00 appropriated for farmers' seed grain loans in drought-stricken areas, returned to the office on May 31.

Harvey E. Stork has been appointed Field Assistant for barberry eradication in Minnesota, effective July 1.

Henry M. Trepanier has been appointed Field Assistant, for duty beginning June 1, in the barberry eradication campaign in North Dakota.

Charles W. VanCleve has been appointed Field Assistant, effective July 1, for barberry eradication in Minnesota. Mr. VanCleve served in this capacity during the past two summers.

C. W. Warburton, who has been at Fargo, North Dakota, since March 12 administering the $2,000,000.00 appropriated for farmers' seed grain loans, returned to Washington on May 21.

John C. West has been appointed, effective July 1, as Field Assistant for duty in the barberry eradication campaign in Minnesota. Mr. West assisted in the campaign in Minnesota during the summers of 1919 and 1920.

Dr. W. H. Weston, Jr., returned to the office on May 25 from Union City Tenn., in which vicinity he spent two weeks investigating a reported outbreak of the downy mildew of wheat (Sclerospora macrospora). He reports that there is every evidence that this downy mildew has been in that section for some time. It is not especially destructive, being confined to parts of fields that are poorly drained. The fungus also was found on a common species of Bromus which grows both in the wheat fields and along the roadsides. A circular letter discussing it will be sent to pathologists in the near future

VISITORS.

A. L. Goetzman, President of the National Millers' Association, was an office visitor on May 27.

MANUSCRIPTS AND PUBLICATIONS

Page proof of Farmers' Bulletin No. 1212, entitled "Straighthead of Rice and Its Control", by W. H. Tisdale and J. Mitchell Jenkins, was read on May 20.

Farmers' Bulletin 1168, "Varieties of Winter Wheat in the Eastern United States," by Clyde E. Leighty, was issued May 17, 1921.

Farmers' Bulletin 1213, "Flag Smut of Wheat and its Control," by W. H. Tisdale and Marion A. Griffiths, was issued May 16, 1921.

C E R E A L C O U R I E R

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 June 10, 1921 No. 13
Personnel (June 1-10) and Field Station (May 16-31) Issue.

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PERSONNEL ITEMS

Miss Rose Bracher, until recently a graduate student in plant pathology at the University of Wisconsin, was appointed Field Assistant effective June 2, to assist in cereal disease experiments at Arlington Farm, Virginia.

J. Allen Clark left Washington on June 4 for an extended field trip to the Pacific Coast. He will visit a number of field stations en route and returning for the purpose of inspecting wheat breeding experiments.

R. W. Leukel, who has been at Madison, Wisconsin, for the past few months studying the nematode problem, arrived in Washington on June 2 and will spend about three weeks here in harvesting, threshing, and making notes on nematode wheat plats at Arlington Farm.

Dr. E. B. Mains, who left Washington on May 23 to return to Lafayette, Ind., via Blacksburg, Va., and Knoxville, Tenn., writes under date of June 1 as follows:

"I had a very interesting trip through Virginia and Tennessee and saw plenty of leaf rust in all places and was able to obtain some very interesting data upon varietal susceptibility and some which I think will prove of considerable importance. There is apparently a difference in the action of varieties at some of the places, especially at Murfreesboro, Tenn. I think I have also found some winter wheat varieties, such as Fulcaster, Michigan Amber, and Mediterranean, which show individuality and in some cases considerable resistance in individuals and I have taken steps to have these tagged and saved. I found material from Prof. Leidigh of Texas awaiting me and he reports a considerable leaf rust epidemic there."

John F. Trost, assistant pathologist stationed at Lafayette, Ind., was married on May 30, and immediately left Lafayette for a honeymoon trip by auto through southern Indiana and the blue grass region of Kentucky.

VISITORS

Mrs. Fred R. Jones, nee Edith K. Seymour, formerly scientific assistant stationed at Lafayette, Ind., visited the office on June 10.

Representative James F. Byrnes, of South Carolina, was an office visitor on June 9.

MANUSCRIPTS AND PUBLICATIONS

A manuscript entitled "The Effect of Date of Seeding on Germination, Growth and Development of Corn," by E. B. Brown and H. S. Garrison, was submitted on June 4 for publication as a Department Bulletin.

A manuscript entitled "The Effects of Mutilating the Seeds on Growth and Productiveness of Corn," by E. B. Brown, was submitted on June 4.

Galley proof of "Two Sclerotium Diseases of Rice," by W. H. Tisdale, was read on June 9. This paper will appear in the Journal of Agricultural Research.

Galley proof of Farmers' Bulletin 1226, "Take-all of Wheat and Its Control," by H. B. Humphrey, A. G. Johnson, and H. H. McKinney, was read on June 10.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens, and Substations (R. R. Chilas). No report.

SOUTH CAROLINA

Pee Dee Substation, Florence (Hugo Stoneberg). The weather during the last half of May was favorable for the rapid advancement of all field crops, due to sufficient moisture that fell during the first half of the month accompanied with clear and warm days. The highest temperatures were 92° 92°, and 93° recorded on the 23rd, 26th, and 29th, respectively. The lowest temperature was 60° recorded on the 17th, 19th, and 25th. Precipitation: 0.3 on the 16th, 0.97 on the 19th, and 0.3 on the 30th.

The cotton is improving, and cultivating and chopping is in progress.

The corn breeding experiment has received its final thinning, the commercial fertilizer applied, and has been sided up.

The upland rice selections were sown on the 23rd and emerged on the 29th and 30th. The favorable weather aided in securing a good stand.

The second cutting of alfalfa has been mowed. Also the oat and vetch hay plats have been cut in the peanut, sweet potato, and hay experiment. An acre

of Irish potatoes was dug on the 26th and marketed; yield - 34 barrels of No. and 6 barrels No. 2. The ground was seeded to Sudan grass.

A good stand was secured in the peanut and sweet potato experiments, and they are growing rapidly.

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor). The cold, rainy spell of the first half of May delayed the rapid maturing of the cereal crops at Arlington. It is believed that this weather decreased the yield of grains, particularly of rye and the earlier wheats, as the bulk of the rain fell when these two crops were in full flower. Wheat appears to be maturing with shorter straw than usual.

The earliest of the barley varieties, the Nakano Wase strains, were harvested 10 days ago, and within a week all others will be mature. Oats has fared better than anticipated earlier in the season and a fair yield is expected.

Dr. Mains of the office spent several days in the field obtaining notes on leaf rust which is especially heavy on many of the wheats and ryes. He is to report more in detail later.

In many of the plats of Purple Straw, C.I. 1915, there are present in the neighborhood of 5% dead heads. These heads started to set seed but died before the kernel was half formed. The cause of the injury has not yet been ascertained.

The weather for May was as follows: Maximum temperature, 90° on the 23rd; minimum, 43° on the 7th. Rainfall, 5.14 inches May 1-15; 1.31 inches May 16-31; total, 6.45 inches. Ten-year average rainfall for May, 2.71 inches.

NEW YORK

Cornell University Experiment Station, Ithaca (H. H. Love). No report.

Rhinebeck (Corn Investigations) (L. S. Mayer). Since my last report all crops have made excellent growth. Weather conditions have been especially favorable for corn and its growth has been rapid. We have just completed the first cultivation. Oats are doing well and the hay crop is very promising.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Crowley Rice Station, Crowley (J. Mitchell Jenkins). Farm operations are getting along nicely. Most rices are up to a good stand. The increase plats are very attractive, and all points to a very successful year. We have been having exceedingly dry weather since May 10 until yesterday, when we had a light shower of slightly over one-half inch. This is very beneficial to non-irrigated crops as well as late seedings, which are germinating unevenly on account of the very dry condition of the soil at time of seeding and since. We have about five acres of soy beans yet to be planted on land that had been in oats. The shower of yesterday has enabled us to take up this seeding today.

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler). The weather in Missouri during the second half of May was mostly clear and very favorable for farm work and crop growth.

Corn planting which had hardly more than started by the middle of the month is now practically completed all over the State. The recent warm weather has been favorable for wheat which is now ripening in the southern part of the State and heading in the northern part. The weather has been too warm for oats which are heading out short practically all over the State. Rain would be beneficial at this time, particularly to oats.

Spring seeding on the Station field has been completed, including over 6000 rod-rows of oats, some three acres of corn for genetic study, and over 700 lots of soy beans for classification.

IOWA

Iowa State College, Ames (Barberry Eradication) (R. H. Porter). No report.

Agricultural Experiment Station, Ames (L. C. Burnett). No report.

ILLINOIS

State Entomology Building, Urbana (Barberry Eradication) (L. R. Tehon). During May, two definite pieces of work have been accomplished, the original survey of the southeastern quarter of McHenry County and the southwestern portion of Lake County and the resurvey of Stephenson County.

Barberries are being found in fairly large numbers in the original survey work. One point of especial interest is that we are frequently finding from one to several bushes growing as escapes on the sides of the roads. Only in a few cases have we found the barberry heavily rusted, but it is of interest to note that the rust is becoming heavier on the barberry as our work approaches the shores of Lake Michigan.

The resurvey in Stephenson County has resulted in the removal of about 600 sprouts, and it is gratifying to feel that, with the exception of four places which will demand perennial attention, the task of eradication is complete in that county.

INDIANA

Purdue University Agricultural Experiment Station.

Corn Root, Stalk, and Ear Rots (G. N. Hoffer). No report.

Leaf Rust Investigations (H. S. Jackson & E. B. Mains). No report.

Purdue University College of Agriculture (Barberry Eradication) (R. J. Hosmer). During the past month a rural survey of Jay County has been completed and the survey of Adams County begun. A surprisingly small amount of barberries were found in the country in Randolph and Jay Counties due largely to the fact that in each of these counties the County Agent waged a vigorous campaign against these shrubs during the summer of 1918. Practically every bush located in the country in the last month has been moderately to heavily infected, although very little stem rust has shown up on the grains as yet. Dr. H. S. Jackson and I visited a number of farms in the vicinity of Wolcottville, LaGrange County, during the past week and found all bushes very heavily infected. This county has not been surveyed farm-to-farm as yet, but practically every farm visited had barberries either cultivated in the yard or escaped in the woods or fields. This district will require very careful scouting, in fact every farm and wood lot must be gone over carefully.

OHIO

College of Agriculture of Ohio State University, Columbus (Barberry Eradication) (John W. Baringer). In April a portion of southwestern Miami County was covered by a farm-to-farm survey. Plantings of common barberries were found to be well distributed in the territory thus covered. All barberries were destroyed as soon as they were found. All rural plantings located in Miami county were infected to a moderate degree.

Several plantings located in the farm-to-farm survey in western Ohio last year had not been removed prior to April 1, 1921. Inspectors of the State Department of Agriculture assisted materially in interpreting the law to the satisfaction of some reluctant barberry owners. In six of the seven counties covered to date by the farm-to-farm survey, it was only necessary to serve four legal notices. Prior to the expiration of the time-limit designated in the notices issued, three of the property owners had complied. The fourth instance is yet to be checked.

In May considerable time was devoted to removing escaped barberry bushes and seedlings from rural sections near Lewisburg, in Preble County. A majority of the month has been spent in an attempt to convince Dayton and Montgomery County residents that they should part with their common barberries. When Dayton was surveyed about two years ago, nearly 500 plantings of rust-susceptible barberries were found within the city limits. In the meantime three-fourths of that number have been removed in response to our requests. In addition, about 100 plantings of barberries were located in the rural sections of Montgomery last year. Ninety per cent of the rural plantings were removed. In going over Dayton again we find that a considerable number of barberries were overlooked in the first survey. Since we have ample and sufficient encouragement from the State Department of Agriculture in the way of inspectors and legal enforcement, a tremendous effort is being made with a view to cleaning house in Dayton.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication) (W. F. Reddy). Farm-to-farm survey work has been completed in the eight townships comprising the northern half of St. Joseph County. Approximately seven hundred bushes have been found and removed from nineteen farm locations.

As previously stated, the most severe infections of barberry bushes in Michigan have been found this year. Considerable of this material has been collected and pressed for use in educational work. Two one-half gallon Mason jars have been filled with leaves having the greatest number of cluster cups and, of course, this material is in formaldehyde solution. Shoe boxes filled with infected green leaves have been sent to the botanical departments of the High Schools in the county and we know that the instructors are making excellent use of these specimens in their class rooms at the present time.

The rural work in St. Joseph County has been rather surprising for the reason that bushes are found in unusual places. Of the nineteen locations found to date, only four have been in farm house yards, the balance having been found along the roads, upon old river banks, along fence rows, or in pasture areas, the majority of them being considerable distances from houses. In most of the previous findings the parent bushes have been found in the farm dooryards and the balance of the bushes have been located through intensive surveys from these dooryard hubs. We are pleased that this situation has arisen early in the season when field assistants are beginning their summer's work, because

it convinces them that barberry bushes may be found anywhere and it behooves them to be on the lookout at all times.

Actual removal of the bushes continues to be a big problem. Most every farmer is convinced that his bushes should come out but to take a team and a man from the field work to assist in such removal appears to be a fairly heavy sacrifice of the farm routine. We have not been flatly refused cooperation, but the farmer wants to set his time for such work. If the work is left for him, his first intentions are very good but the eradication may suffer postponement. Again if this work is left one has the feeling that not sufficient effort will be made to get all of the roots and, therefore, sprouts may be expected. Leaving of bushes calls for revisiting the location and this return trip is going to mean road work which would be more profitable in new territory. We are fast approaching the conclusion "finding in and coming out" are simultaneous activities.

Additional types of eradication tools are needed. A mattock is an excellent tool, but the short handled spade supplied is not satisfactory in removing large bushes. We have tried both a tractor and teams for pulling bushes and have found that horses are the more satisfactory. We have not been able to borrow a stump puller but we are making every effort to locate an Ajax hand stump puller. The matter was discussed with a farmer who has had experience in removing locusts with such a machine and it gave entire satisfaction.

On the farm of Judge Yaple, near Mendon, two large bushes were removed during the past week. The bushes were grubbed and an effort made to get all of the roots. On the area covered by the roots of one of the bushes we placed ten pounds of salt and on a similar area of the other bush two gallons of coal oil were used. We have the promise of the man living on the farm that he will inspect these experiments and inform us if sprouts appear.

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson). No report.

Department of Agriculture, State Capitol, Madison (Barberry Eradication) (Noel F. Thompson). We had two teams in the field during most of May and completed the scouting of about 27 townships as well as resurveying three counties. Heavy rains during the month delayed the work considerably.

An interesting feature was the resurvey of the district around Trempealeau, near the Mississippi above LaCrosse, where some thousands of wild bushes were dug in July and early August of 1919. The digging at that time was very well done, according to reports, but nevertheless numerous sprouts were found this spring. Many of these came from fragments of old roots, eight inches to a foot below the surface. In addition to the sprouts we found numerous seedlings. Some of these still bore the green cotyledons and had evidently germinated this spring. Since there were no bushes in the vicinity that could have borne seeds recently and since the old bushes were dug before the seeds were ripe in 1919, these seeds must have lain dormant in the soil at least since 1918 or three years.

Every barberry found this month showed rust more or less abundantly, but only one instance of stem rust on a grain was discovered. That was at Trempealeau on May 30.

MINNESOTA

College of Agriculture, University Farm, St. Paul (Barberry Eradication) (Leonard W. Melander). May was a fair month for farm-to-farm survey in Minnesota. However, in the southwestern part of the State rains were quite heavy. The field men worked almost every day but at times were hampered by muddy roads.

During May 83 bushes were found in 9 plantings. All were heavily infected with the aecial stage of Puccinia graminis. In many cases this year's sprouts were so heavily infected that the growth of the plant was hindered. In rechecking former plantings of barberry, 652 bunches of sprouts were found. This shows that an annual inspection of all places where barberry has been found is necessary.

The State Department of Agriculture is preparing to augment our forces for a concerted attack July 1, when a "Skirmish" line will be entrenched on a battle front from Renville to Kittson Counties along the Dakota border. The line of attack will be eastward. The State Entomologist is planning on having a force for "mopping-up" purposes only.

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations) (E. C. Stakman). No report.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger). The last half of May has been dry. Wheat has been holding out better than could be expected. With the rain of May 31, wheat looks good for an average of around 10 bushels per acre for the vicinity of Woodward.

Quite a lot of sorghum plats have been seeded since last report. The third date-of-seeding plats were seeded on May 16, and emerged to stands on May 22 and 23. The fourth date plats were seeded yesterday, June 1. On May 17, the rate-of-seeding and method-of-spacing experiments with Sunrise kafir were seeded, and emerged to good stands on May 23. The sorghum varietal experiment was seeded on May 17 and 18 and good stands of practically every variety were obtained May 23 and 24. The sixty-odd samples of sorghum seed collected in Africa by Dr. Shantz were seeded in short nursery rows this morning, June 2.

The maximum temperature for the last half of May was 96° on May 28, while the minimum was 44° on the 15th. The precipitation for the last half of May totaled 0.57 inch, 0.50 inch of which fell on the night of May 31.

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker). No report.

Hays Branch Station, Hays (A. F. Swanson). Since Tuesday, May 30, we have had 2.19 inches of rain which came at a very opportune time. Crops were just beginning to suffer and further drought would have seriously injured the prospects. The rains were quite general throughout the State.

Oats and barley have revived to a great extent, and will probably grow tall enough on the Cereal Project so that they can be cut with a binder.

The writer had the privilege of making a 150-mile trip north of Hays with Mr. Halsted of the Dry Land Agriculture project. The prospects for wheat are fair. Wheat will be short this year and is generally thin on the ground. The late rains however will help the situation a great deal. Rowed crops are remarkably clean from weeds this year. Corn is being cultivated for the first time and the stand is good. Oats and barley have not made satisfactory growth as compared to other years.

On the Cereal Project, Burt x Sixty Day and Burt oats are the earliest and most promising at this time, followed closely by Fulghum. California Mariout, Mariout (C.I. 261), Stavorpol and Coast barleys are early and promising.

It will be several days before work in the fields can be resumed, because of recent rains.

COLORADO

Agricultural College, Fort Collins (Barberry Eradication) (John E. Fitzsimmons). During the month of May we have added two men to the field force for scouting for the common barberry bushes. These men have been resurveying the irrigation projects in the vicinity of Loveland and Canon City. About fifty bushes were found growing wild in the Loveland district. These were scattered over quite a large area. None of the bushes were found to be infected. In the Canon City district about one hundred and fifty bushes were found scattered through the orchards. These were about two and a half feet in height. It was necessary to cover the entire area on foot.

The first infections on barberry in this State were found at Longmont, May 31. This was a slight infection on sprouts from bushes dug out last year. On June 3, infection was found north of Fort Collins. Some rust on grains has been reported in the northeastern part of the State near Sterling.

Akron Experiment Farm, Akron (F. A. Coffman). Weather conditions during May at Akron Field Station were extremely adverse. The weather records kept at Akron, Colo., and at the Akron Field Station, show May, 1921, to be the most droughty summer month which has been experienced in 17 years. The months included as summer months are April, May, June, July, and August. The 17-year average precipitation in May has been approximately 2.70 inches. During May, 1921, but .33 of an inch of moisture was received. This is but about 12-1/2 per cent of the normal precipitation for the month at Akron. Average wind velocities for the month were high, and frequent wind and dust storms occurred. Local showers relieved the situation in localities, but the immediate section in which the Akron Field Station is located has received no local showers of any value to crops since April 16. With this long period of drought, it is very surprising that crops have suffered so little from lack of moisture.

Due to the prolonged dry spell winter wheat prospects have declined considerably during the month of May. It is very likely that taken as a whole the crop's condition is about 75 per cent of normal at this time. The dry weather has prevented proper tillering, especially on fields which were "stubbled in" on wheat ground. It seems possible, however, that with a normal and well distributed precipitation during June, practically as good a wheat crop as was grown in 1920 may still be produced. Rain must be received at once to make this at all possible. Early sown winter wheat is nearly fifty per cent headed. Winter rye is in full bloom and spring barley has started to boot. Corn planting in the section was completed about May 20 to 25. Many farmers

have already started to plant sorghum, but some prefer to wait for a rain rather than sow in a dry seed bed with little or no prospect for the seed to germinate.

Work on Akron Field Station has advanced with the season. Corn planting was completed June 1, with the last planting in the varietal-date experiment. Excellent stands were produced by the May 10 plantings in this experiment and much of the April 13 planting produced satisfactory stands. This was surprising since much of this corn remained in the ground over a month before it came up. The soil during this time was very moist and cold. Corn planted at this early date shows marked differences between varieties as to the percentages of final germination.

Cereal experiments have suffered very little as yet, at Akron, from the dry weather. Practically no signs of drying up are to be noticed in any of the spring wheat or barley plats. Spring oats have suffered slightly from the severe wind storms which we have had the past two weeks. The condition of the spring grains on May 31 was such that they could withstand another week of warm windy weather without suffering to any considerable extent. Winter wheat is showing more injury from lack of moisture than is the spring grain. Black Chaff (Clarks) is now in nearly full head; many of the other varieties have started to head. Rosen and Giant Winter rye are in full bloom. Both varieties are showing strong indications of lack of moisture by the appearance of blighted heads.

In the nursery experiments of the Cereal Investigations Office at Akron, little damage has yet been done by the dry weather. The most serious results from drought are being shown by the winter-hardiness experiment. The object of this experiment has been largely completed so that this cannot be considered a serious damage. This experiment is drying up due to the heavy rate at which this wheat was sown. Some rather interesting results are being shown by the rate-depth-and-width of seeding wheat in furrows experiment. The wider and deeper rows appear to be withstanding the adverse conditions more satisfactorily than the narrow and more shallow seedings.

During the month of May, Dr. H. L. Shantz, of the Bureau of Plant Industry, Prof. E. J. Maynard of Colorado Agricultural College, and Mr. Lester Brooks of the Department of the Interior visited the Station.

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication) (A. F. Thiel). No report.

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication) (Ralph U. Cotter). In Albany County, all stations on the Union Pacific Railroad were surveyed. In general, the towns along the railroad have had more shrubbery than those off the railroad. The two plantings of barberry remaining in Laramie were removed during the month. There is now no barberry known to exist in Albany County.

In Laramie County, very little shrubbery of any kind was found save along the streams. Crow Creek (in the south half of the county) was scouted for practically the entire distance in Laramie County without finding other bushes than gooseberries, currants, and lilacs in one place. Horse Creek has no shrubbery as concerns the ranches along its course in the western half of the

county, but about the middle, the ranches are old and long established, so that almost anything may be found on them. At the J. M. D. Ranch no shrubbery save the choke cherries and service berries was found. At the C. Y. Ranch ten miles away from it. about 50 spirea bushes and 10 or 15 lilac bushes were found. This stream was not scouted very thoroughly because of the inaccessible character of the country. The C. Y. Ranch is about 18 miles from Cheyenne in an air line and about 30 the way one has to go to get to it.

The country around Cheyenne was thoroughly scouted as being the most likely place to find barberry. One sheep owner had planted Japanese barberry the year previous, and that was the nearest I came to finding barberry. Along the Union Pacific Railroad towards Omaha, the farmers have planted some bushes in the stretch between Egbert and Pine Bluffs. All the bushes I saw here and for six miles south of Pine Bluffs were gooseberry or currant. I inspected the planting found by H. B. Harris in Pine Bluffs, or rather a mile from Pine Bluffs in Nebraska. This was the only barberry seen with the exception of that in Cheyenne.

Goshen County, as far as scouted, has much the same conditions that exist in Laramie County. Goshen County is irrigated over half of the county, but none of the settlers have planted any shrubbery yet. As in Laramie County, one can see for six miles on either side of the road at times, and one house in ten miles may have a currant bush. The houses are perched on hilltops, so they may be scouted with a field glass for a mile on each side of the road.

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication) (H. C. Gilbert). During the month of May we have found the rust on barberries developing quite generally in moderate amounts, wherever we have found barberries. In one or two instances very severe infection was found. The first aecia were found on May 5 at Flandreau, and the first mature aecia on May 13. Since that time only matured infection has been found. We have watched carefully for the red stage of the disease on grains and grasses, but as yet have been unable to find it. Only a trace of orange leaf rust has been found on the wheat this month.

We have found nine hundred eighty-one new barberry bushes in six new plantings, and revisited thirty-one plantings. There were 5,048 bushes in the 31 plantings that we revisited, all of which have been removed. However, a few of the larger bushes were sprouting.

Our experience this spring shows that we cannot be too careful in checking up the removal of barberry plantings found. In the case of old, large bushes it is difficult to be certain they are completely eradicated. Even after the most careful digging, we have found that in a number of cases small roots overlooked have sprouted six months or a year after the eradication of the original bushes. We are, therefore, planning to keep a check on these old plantings for at least two or three years.

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel). Dr. A. G. Johnson, pathologist in cereal disease investigations, visited the Station on May 27.

Mr. A. C. Dillman, in charge of flax investigations, visited the Station May 27 and 28.

W. E. Brentzel made a trip to Mandan, N. Dak., May 18 and 19 to sow the plats in field experiments dealing with flax wilt and canker.

The first appearance of Puccinia triticina was observed on May 27 on Kota and Acme wheats. Stem rust has not appeared. Flax was injured somewhat by heavy frosts on May 15 and 16. Wilt, heat canker, and rust of flax have not appeared.

State College of Agriculture, Agricultural College (Barberry Eradication) (George C. Mayoue). Field work, resurveying Barnes County, was begun May 1, and original survey work in Logan County May 15. Rain delayed the work in Barnes County to some extent.

A hedge of 178 bushes was found by the State leader on a ranch twelve miles south of Glen Ullin in Morton County. A hedge of 195 bushes was reported by mail which included a sample of the bushes, at Dunn Center in Dunn County, which is within sixty miles of the Montana line. These are the two largest hedges that have been found in this State west of the Missouri River. However, several properties having one to six bushes have been found west of the river. It is more evident as we progress with our work that the common barberry bushes are scattered all over the State.

Up to date no rust infection has been found on the bushes which have been located. During the month of May 633 bushes were located and destroyed in North Dakota.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.). During the last half of May slow-falling rains have been frequent. It seems to rain very easily this season. The surface soil has been moist all the time.

All vegetation, including field crops, trees and weeds, is making exceptionally luxuriant growth.

Mr. W. E. Brentzel was here May 18 and 19 attending to his flax disease work here.

Dr. A. G. Johnson was here May 26 to arrange for the disposition of flax seed left at Madison by Mr. C. M. Woodworth. Mr. Dillman left with him that evening for a short stay in Fargo.

Maximum temperature for the last half of May was 89° recorded May 22: minimum 39° recorded May 17 and 18; precipitation 2.14 inches.

Dickinson Substation, Dickinson (Ralph W. Smith). Crop conditions are quite favorable at this time. No heavy rains have occurred this month, but light rains have fallen at frequent intervals, totaling 1.78 inches for the month. Winter rye is almost fully headed and spring grains are making rapid growth.

The nursery has been cultivated. Plats are being trimmed and the alleys cultivated. Stand notes have been taken in plats and nursery, showing quite uniformly good stands.

The cutworms are doing some damage to corn at the Substation but small grain has not been injured. In this vicinity, however, some severe damage to

wheat and other small grain is reported to have been done by these pests. Mr. C. N. Ainslie, Government entomologist, is studying the situation in this and adjoining counties.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May). The precipitation for the first 27 days of May has been 2.70 inches, and rain is now falling. The weather is rather cool now and has been during most of the month, although we have had a few warm days.

All of the plats and nursery rows were trimmed this week. The spring grain nursery marker stakes were set this morning, while the setting of the plat stakes must go over until next week.

All of the winter wheat under the Cereal Project has been harrowed to kill the weeds which are emerging. The survival of winter wheat in the furrow drill seedings of the furrow drill experiments will average 80 or 85 per cent, while the ordinary drill seedings will not average over 20 to 25 per cent survival. There is practically nothing in the ordinary drill seedings under the type of drill-rate-and-direction of seeding experiment, while under the straw mulch test there is 30 to 40 per cent survival. The straw mulch does not show much advantage for the furrow drill. The wind blew the straw of the straw mulch so badly during the winter that the rates of application are extremely irregular. On this account the results from the straw mulching test will not be reliable this year. The plats sown with the furrow drill in experiment in the straw mulching and rate-and-direction of seeding show very distinct advantage in winter survival and amount of growth over the plats sown with the ordinary drill. The winter survival in the varietal experiments will average about 30 to 35 per cent. The varieties were sown with the ordinary drill.

All crops are growing nicely. The winter wheat in our large commercial field on newly broken sod is six or more inches high and the alfalfa and hay grasses are eight or ten inches high. Early sown spring grain is four or five inches high.

State College of Agriculture, Bozeman (Barberry Eradication) (H. E. Morris). No report.

WESTERN BASIN AND COAST AREAS
(North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (L. C. Archer). The weather has been splendid for all crops this spring. In fact, this has been the best spring we have had since the Station was established. Thus far we have had the following amounts of precipitation: in April, 2.00 inches; in May, 2.80 inches. Much rain fell during the fall and a great amount of snow fell during the winter. There was very little run off and, as a result, the ground is wet to considerable depth.

Dry farmers are rejoicing over the prospects for the year. Grain crops over southern Idaho never looked better. Excellent stands of all crops have been obtained. While the sugar beet acreage has been reduced to almost half of what it was last year, the prospects for a crop are very good. Thinning is

now under way. Sugar beet authorities say that trouble from the beet leaf hopper, the cause of such heavy losses last year, will be very slight and may not occur at all. Potato acreage all over the State and particularly in the eastern part of Idaho has been greatly increased. Some growers fear that the heavy rainfall and prolonged wet weather may rot the tuber sets which in some cases have been in the ground for from three to four weeks.

Grain prices recently reflected a slight rise and this has been a source of encouragement to the grain farmers in this section. About half the wheat acreage has been signed up with the Northwestern Wheat Growers Association, which is now affiliated with the U. S. Grain Growers, Incorporated.

The nursery on the Station never looked better. Gus Wiebe, a Junior at the University, who has sown the nursery the two past seasons, was again secured to sow it. It has been difficult to keep ahead of the weeds because of the great amount of rainfall received to date.

This season a group of plats on the new part of the farm was treated with various kinds of commercial fertilizers, or rather plant stimulants. This work is being done in cooperation with the Division of Agronomy at the University.

This year also an extensive varietal experiment with sugar beets was begun, 15 varieties being planted, most of them in duplicate. Much of this work is being done to get an idea as to sugar content of the various varieties. This work is being done in cooperation with the Department of Agricultural Chemistry at the University.

A perfect stand of alfalfa on the former dry farm is now assured. The new scenery now greeting one's eye when looking eastward across the railroad track speaks volumes for irrigation and the future work this Station will be able to carry on. To one who has had to tolerate bone-dry dry farming and drought for several years past, this new vista is a stimulant and an inspiration.

New potato selections which have been developed at this Station during the last three years have been distributed to a few growers for increase and have taken like wildfire. Too bad we did not have more.

OREGON

Sherman County Branch Station, Moro (D. E. Stephens). Weather conditions during the months of April and May have been favorable for grain crops throughout eastern Oregon. The precipitation this spring has been about normal, but the weather thus far has been unusually cool. Due to the mild winter and no loss of moisture by run-off, the percentage of moisture in the soil in the early spring was considerably higher than usual, especially in stubble ground. The total precipitation from September 1 to May 31 has been 11.62 inches, which is about 1.5 inches more than the normal for that period. The total precipitation for April was 0.69 inch and for May 0.96 inch.

Winter wheat on the Station is heading. In the varietal trial, the first wheat to start heading was Clark Blackchaff. This variety will be fully headed at least a week earlier than any of the Turkey wheats. Indications at present are that winter wheat in this vicinity will yield better than last year, when the yields were between 30 and 35 bushels per acre. In the southern

part of this county, where the average soil depth is less than three feet, winter wheat will need more rain to make a crop, but in this vicinity there appears to be enough reserve moisture in the soil to insure fair yields with no more rain, if temperature conditions continue favorable.

A little stripe rust is present on some of the winter wheats, one of the Fortyfold x Federation hybrids in the nursery having an especially heavy infection. Adjacent rows of a cross between Turkey and Karun show no infection yet.

CALIFORNIA

Rice Field Station, Biggs (J. W. Jones). No report.

Plant Introduction Station, Chico (V. H. Florell). The wheat-crossing program has been completed and so far as can be ascertained a high percentage of crosses will be secured. The barleys are all ripe, and harvesting of the nursery will begin today. A number of the early wheats in the field plat experiment are fully ripe but some of the late varieties have not begun to ripen. The varieties in the wheat classification nursery are ripening more slowly than usual but should be nearly all ripe by the middle of June. All but one or two varieties of oats are ripe.

The cool weather of the past few weeks has greatly benefited the winter-sown grains. The prospects are now favorable for a fair crop.

On May 18 I started on a trip for points in central and southern California to make observations on the sowings of Federation wheat which had been placed by Prof. W. W. Mackie, as agreed at a conference last summer when Mr. J. A. Clark was in Chico. The following points were visited: Davis, Kearney Park (near Fresno), Westhaven, Lancaster, El Centro, Escondido, Riverside, Paso Robles, Fairfield, and Dixon.

The Hard Federation and White Federation wheats were making a satisfactory showing and compared very favorably with the common commercial varieties in most cases. There apparently will be no difficulty in securing stands with these varieties under varying conditions as good stands were secured at all points. The early and short, strong culmed habit of growth of the two wheats seems especially adapted to the drier sections of the southern part of the State. At Escondido, where the drought had been unusually severe with nearly every leaf of the plants in all varieties fired and practically dry, the Hard Federation was outstanding in drought resistance as compared with the Federation and White Federation varieties. Several other Australian varieties, however, were also strongly drought-resistant. Both Hard and White Federation are susceptible to the common leaf (triticina) and stem (graminis) rusts, but the White Federation was found to be a particularly congenial host to the yellow stripe (glumarum) rust. Stripe rust was observed on this variety at all points except two where the drought was most severe. Stripe rust is rarely found on Hard Federation.

Although it had not been noted previously, it appears that Hard Federation is quite susceptible to bunt. Bunt was observed most frequently on this variety and at Paso Robles a heavy infection was found in one of the two sowings. At this point frost had injured badly a portion of the plat with the remainder about normal. On the frosted portion a bunt infection of 25 per cent was recorded, while on the unfrosted portion there was a 2 per cent infection.

On the White Federation plat only a trace of bunt was found on both the frosted and unfrosted portions.

At two points the varieties were grown under irrigation. They apparently were making a healthy normal growth. In both cases the irrigation had been light. The response to heavy irrigation might not have been so favorable.

Generally speaking, the cereal crops will be light in the State this year. A few good looking fields were observed but more often they were just average or had suffered injury from drought, excessive rains, or late frosts. In the Sacramento Valley the early grains especially were injured by excessive rainfall, while in the southern San Joaquin Valley and southern Coastal sections many fields were badly hurt by drought. In the grain-growing section north of San Luis Obispo there was considerable injury from both frost and drought. The best prospects for a crop were in the northern part of the San Joaquin Valley. In the Sacramento Valley tillering is poor, slightly subnormal in the central portion (in the vicinity of Davis), and normal in the south and in the coastal sections. It was interesting to find that Bunyip wheat is quite widely distributed and appears to be gaining in favor.

In the south practically no cereal diseases were found. The rusts were most abundant to the north but at no point was infection severe except in a few cases in certain varieties.

Since coming back to Chico, severe infections of stem rust have developed on several of the more susceptible varieties of wheat in the classification nursery.

Although lighter than usual the barley crop is in slightly better condition than the wheat crop. The California Mariout is becoming widely distributed and may be seen about as often as the Coast variety.

Agricultural Experiment Station, Davis (F. N. Briggs). No report.

Agricultural Experiment Station, Berkeley (W. W. Mackie). No report.

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C E R E A L C O U R I E R

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 June 20, 1921 No. 14
Personnel (June 11-20) and Field Station (June 1-15) Issue.

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PERSONNEL ITEMS

William R. Barger of Middlebury, Ind., has been appointed field assistant in the barberry eradication in that State, effective July 1.

Frederick F. Blaine, formerly engaged in the smut-control campaign, has been appointed a temporary field assistant and reported on June 13 for duty at Arlington Farm where he will take data on the smut plats.

Wallace Butler of San Antonio, Tex., has been appointed field assistant for epidemiology studies in black stem rust investigations, effective June 1.

John C. Feugh of St. Louis, Mo., has been appointed unskilled laborer at the Missouri Botanical Garden, St. Louis, Mo., effective June 1.

The temporary appointment of Rudolph S. Frigstad, field assistant in the barberry eradication campaign in North Dakota, has been terminated effective June 30.

Miss Ida T. Goul has been appointed stenographer and typewriter at Madison, Wis., effective June 1, for clerical work incident to the barberry eradication campaign.

Dr. Harry V. Harlan left Washington June 17, for the Aberdeen Substation, Aberdeen, Ida., to continue his physiological studies on the development of the barley kernel.

The temporary appointment of James T. Jacques, field assistant in the barberry eradication campaign in Wisconsin, has been terminated, effective June 30.

Dr. A. G. Johnson returned to Madison, Wis., about June 15 from his investigation of the outbreak of take-all recently reported from Arkansas. On June 20, he arrived in Washington for conference, having visited the recently-reported take-all outbreak in Knox Co., Indiana, while en route.

R. A. Langenbacher, formerly in the smut-control campaign in the Mississippi Valley, is now county agent of Bates Co., Mo., where he recently received a large promotion.

Dr. C. E. Leighty left Washington June 15 for Illinois with Dr. Tisdale, to determine the varieties of wheat concerned in the fields infected with flag smut in St. Clair County, Ill., and to take part in conferences on further procedure in flag smut control. Before returning he will visit his experiments at Columbia, Mo., and at Lawrenceville, Ill.

Ernest A. Lungren of Fort Collins, Colo., has been appointed field assistant in the barberry eradication campaign in South Dakota, effective July 1.

John H. Martin left Washington June 11, going direct to the State Agricultural Experiment Station, Manhattan, Kans., to help with results in cooperative breeding experiments and will spend the summer in studying wheat experiments at various stations in the Great Plains area. Mr. Martin obtained his master's degree from the University of Maryland on June 11.

Walter H. Michaels of Watertown, S. Dak., has been appointed field assistant in barberry eradication in Colorado, effective July 1.

Walter H. Nuttall of Bethany, Ill., has been appointed field assistant in the barberry eradication campaign in Illinois, effective July 1.

Merritt N. Pope left Washington June 11, going direct to St. Paul, Minn., to obtain the season's results in cooperative barley experiments.

William J. Sando, who was appointed on June 1 to assist Dr. Leighty in eastern wheat investigations, received his master's degree from the University of Maryland on June 11.

Thomas R. Stanton, assistant in oat investigations, was granted his master's degree by the University of Maryland on June 11.

Howard A. Taft of East Lansing, Mich., was appointed agent in barberry eradication in Michigan, effective June 6, in place of Miss Vesta C. Haney, resigned.

Dr. W. H. Tisdale visited the flag smut area in Madison and St. Clair Counties, Ill., June 13-19, and conferred with the State and Federal plant disease survey men regarding the distribution of the disease; with Mr. Wolpert, who has charge of the Cereal Office interests in the flag smut plat work, and with Mr. Roethe who has been at Granite City for some time installing dust- and smut-collecting fans for the purpose of collecting the flag smut spores from the threshers. Following this he visited Urbana for conference regarding the possibilities of eradicating the flag smut and for the purpose of talking over the results of the present investigations and making plans for future investigations.

John F. Trost, assistant in corn rot investigations at LaFayette, Ind., was married on May 30, following which he made an automobile tour through southern Indiana and parts of Kentucky.

The appointment of Frank Walquist, field assistant in the barberry eradication campaign in Wisconsin, has been terminated, effective June 30.

Miss Florence S. Willey left Ames, Ia., on June 20 to collect crown rust material on species of bromus in the mountains of Colorado, and to obtain aecial material of this rust from Rocky Mountain species of Rhamnus.

VISITORS

Glenn Campbell, Advertising Manager of the Northwest Farmer and Stockman, at Pittsburg, Pa., was an office visitor on June 18. He was a graduate of the Iowa State College in 1915 and is National President of Alpha Gamma Rho, an agricultural fraternity.

Director G. I. Christie of Purdue University (Indiana) Agricultural Experiment Station, visited the office on June 20 to discuss the recently reported outbreak of take-all in Knox County near Vincennes. Director Christie is a member of the recently appointed Committee on Agricultural Economics and is attending the meetings of that Committee in Washington.

Dean Thomas F. Hunt of the College of Agriculture of the University of California, was an office visitor on June 15 and 17 to discuss proposed cooperation in cereal investigations in California. Dean Hunt has spent his year of sabatic leave in Europe in a study of agricultural conditions abroad. During recent months he has represented the United States at the International Institute of Agriculture in Rome.

Dr. R. A. Jehle, extension pathologist, University of Maryland, was an office visitor on June 11, at which time he conferred regarding diseases of cereals.

Dr. W. B. Tisdale, assistant plant pathologist, University of Wisconsin, was an office visitor on June 15.

MANUSCRIPTS AND PUBLICATIONS

Department Circular No. 186, "The Occurrence of Wheat Downy Mildew in the United States," by Dr. William H. Weston, Jr., Pathologist in Charge of Downy Mildew Investigations, was issued on June 18.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens, and Substations (R. R. Childs). No report.

SOUTH CAROLINA

Pee Dee Substation, Florence (Hugo Stoneberg). The weather has been hot with no rainfall. The maximum temperatures have been near 100 degrees for several days. Such crops as cotton, corn, and tobacco have been making rapid growth. Fields are comparatively clean and cultivation is in progress. Chopping cotton has been completed. The oat plats have been harvested.

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor). The harvesting of barley was completed last week. With favorable weather, the crop of the varietal plats of wheat and oats will be in the shock by June 22. The thrashing of the grain

should be in full operation by June 27. About one-half of Dr. Leighty's wheat nursery, containing approximately 3,000 rod rows, has been harvested and the crop is in excellent condition. Several wheat-rye hybrids have been found in the wheat nursery but none in the varietal plats. Natural crossing of wheat, however, is very evident in the wheat plats.

The weather has been exceptionally favorable for harvesting, but rain is badly needed by the growing crops. Since May 16 the total precipitation to date is only 1.67 inches, and for the first 19 days of June 0.36 inch. The maximum temperature June 1-19, inclusive, was 92° on the 13th and the minimum, 49° on the 6th.

NEW YORK

Cornell University Experiment Station, Ithaca (H. H. Love). The early spring has caused wheat and rye to head much earlier and indications are that harvest will be much earlier than usual, possibly wheat and rye cutting will start the 1st of July. It has been a little too dry for the best development of the grains but in some localities rains have fallen recently which will help wheat in filling out. Leaf rust is very bad in many fields. It is particularly so on station grounds and in some other places that I have visited. The wheat nursery is doing very well but, due to some causes which we are not yet able to explain, we will have greater differences in yield than we have ever had before, particularly in our series in which the rows are replicated nine times. In this series the differences are very great although we would have expected the yields in general to be fairly close together on account of the fact that only the best strains get into this series.

The wheat plats are showing up very well. The new Forward variety is looking very promising at present, as is the case with some hybrids which we have, including one of Dr. Leighty's crosses.

The barley is heading and oats are in the boot, so it is very likely that an early harvest of these crops may also be expected.

Last week Dr. Myers and I, in company with M. C. Rumsey and L. A. Toan of the Hickox-Rumsey Seed Company, visited the experimental fields at Guelph, Ontario. The grain plats were looking well and much information was obtained. We also inspected the wheat and oat plats and the increase of the Forward wheat on lands controlled by Mr. Rumsey. These plats were showing up especially well and we expect some good results from them.

The series of hybrids which were grown in the greenhouse have been harvested and much interesting material was obtained.

Rhinebeck (Corn Investigations) (L. S. Mayer). No report.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Crowley Rice Station, Crowley (J. Mitchell Jenkins). Rain fell practically every day last week, giving us a total precipitation for the week of about six inches. This rain was much needed after the very dry weather of May, during which period only 1.70 inches of rain fell. This caused the fertilizer plats to germinate nicely, and in the case of some other seedings, caused

The wet weather has interfered with field work and quite a portion of the cereal project needs the cultivating, which probably will be started this afternoon. Plats sown on three earlier dates have been thinned, as well as the Sunrise kafir of the rate-of-seeding experiment. At present the varietal plats are being thinned to comparable stands. The sorghums and broomcorn are making very rapid growth.

The broomcorn varietal plats and nursery were seeded on June 3, and emerged to good stands by the 9th. Rain prevented further seeding until June 10, when the milo rate-of-seeding experiment and the sorghum nursery were seeded. On June 11, the broomcorn rate-of-seeding plats and harvesting experiments were seeded. The fifth date was seeded on June 15.

With a few days of dry weather the cereal project will be in good shape, as some thinning and cultivation will put it in excellent condition.

The maximum temperature has been 90° on June 2 and 3, and the minimum was 60° on June 7. The precipitation for June to date is 3.92 inches.

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker). No report.

Hays Branch Station, Hays (A. F. Swanson). Since May 31 we have had 4.31 inches of rain, which broke a severe drought. Crops have responded very favorably to the rain but field work has been greatly delayed. It has been possible to do only three days of field work since May 30. Rowed crops are becoming weedy and badly in need of cultivation. Fortunately the sorghum ground on the cereal project was comparatively clean of weeds. The first cultivation of the sorghums will be completed tomorrow evening. Some of the thinning was done during the wet weather so that some time will be saved for the more important work now at hand.

Harvest is almost upon us. Nebraska No. 28 is practically ripe. C. I. Mariout, California Mariout, and Stravopol barleys are ripening. I expect to start harvesting June 18.

Fallow wheat ground for next year is now being plowed on the cereal project.

Mr. J. Allen Clark and Prof. J. H. Parker were Station visitors Saturday, June 11. Mr. H. H. Walkden of the U. S. Entomological Field Laboratory at Wichita, visited the cereal project yesterday, for the purpose of getting some data on Hessian flies. A cooperative experiment was arranged with Mr. Walkden in which sowings will be made at different dates so that a further study can be made of the Hessian flies at Hays.

I have made several trips for the Kansas Crop Improvement Association for the purpose of inspecting Kanred wheat. Kanred wheat is again showing a remarkable freedom from leaf rust as compared to the local varieties with good indications of a substantial increase in yield. The average yield of wheat throughout the county will run from 12 to 15 bushels to the acre in spite of the fact that we had much injury from soil blowing early in the year.

COLORADO

Akron Experiment Farm, Akron (F. A. Coffman). Akron Field Station is experiencing one of the most severe and prolonged droughts in its entire history.

The total precipitation for the past 60 days is but slightly over 1.50 inches. This has come in very light showers, a total of between 15 and 20 showers having been received. No daily precipitation of more than one-fourth inch has been received, and only one shower of more than one-fifth inch has been recorded. Northeastern Colorado, as a whole, has not suffered to any great extent from dry weather. Heavy local showers have been received in nearly all sections of this and other eastern Colorado counties during the past two weeks. The immediate section in which Akron Field Station is located has been unfortunate in having received only light showers or sprinkles while the main part of the storms have "gone around." Although we have had a dearth of moisture, cloudy weather after our light showers has permitted a maximum of benefit from them. During the past three days the weather has had every indication of a drought, however, with high, hot south winds and no clouds to mention in the sky.

Despite the unfavorable weather conditions, winter wheat has withstood the drought to a surprising degree. Most of the winter wheat is now in full head. In the plats of early-maturing winter wheat the kernels have begun to form. Spring wheat will soon be in full head. The straw will be short this year, regardless of the moisture conditions from now on. The early varieties of oats and barley are fully headed. Both of these crops have withstood the unfavorable weather much better than might be expected. The cereal crops in the nursery are standing up under these adverse weather conditions much better, on an average, than are the plat seedings. This is possioly due to the nursery seedings having been sown on soil which was fallowed in 1920.

While the weather conditions have been extremely unfavorable for small grains, corn and sorghum crops have been making a maximum growth, where there was sufficient moisture to germinate the seed. All crops are rapidly approaching that stage where moisture in abundance is imperative or practically a total crop failure will be the result on all but fallowed ground, and only very light yields can be expected on the fallow.

A total of slightly over 0.66 inch of moisture has been received in June. Temperatures of from 85° to above 90° have been recorded many times during the first half of the month.

WYOMING

Cheyenne Experiment Farm, Cheyenne (A. L. Nelson). The spring weather has been very favorable for farm operations. A large acreage of spring cereals has been seeded, especially oats, wheat, and forage millets. The precipitation by months is as follows: January 0.95, February 0.07, March 0.14, April 0.85, May 2.09, and June, to date, 1.84 inches.

The winter wheat suffered during March from soil blowing but will produce a large yield if conditions continue favorable. It is just beginning to head and is three feet high. The spring grains are looking fine both on the dry-land and cereal plats. The prairies are in excellent grazing conditions and the livestock industry has good prospects for an abundance of grass.

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (. E. Brentzel). No report.

Dickinson Substation, Dickinson (Ralph W. Smith). The drought which had begun to look serious was broken by a rain of 1.52 inches this morning. This is the best rain that has occurred this year and has done untold good to the farms of this section. From reports in from other districts it is believed that this rain was quite general over this part of the State.

During the past few days hot weather with a few hot winds has caused considerable injury to cereal crops. Winter rye was drying up prematurely, winter wheat was heading, and the lower leaves of spring cereals were drying up. Early varieties of wheat, oats, and barley will begin heading within a short time.

Cutworms have done considerable damage to corn and also small grain in adjoining counties and some injury has resulted from these pests in this county. Mr. C. N. Ainslie, Government Entomologist, who has been investigating the cutworms in Golden Valley County around Beach, visited the Substation during the past week and found some worms in cornfields here. It is thought that the Pale Western Cutworm is the species doing the most damage in this section.

The Substation was visited during the week by Mr. J. M. Stephens of the Dry Land Office, Mr. Westover from the Forage Crop Office, and Mr. R. Newton from the Experiment Station at Edmonton, Alberta.

There has been no frost this month, the minimum temperature being 37° on the 3rd, and the maximum 98° on the 11th. The total precipitation for the first half of the month was 1.60 inches, most of which fell this morning.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.). The first half of June has been generally warm and dry. All field crops have been looking exceptionally well, all the season so far. It was getting very dry, however, and a rain last night of 0.57 inch came at a very opportune time.

Some barley awns already have made their appearance in the early varieties and the first flax blooms were noted this morning in the earliest sowings of C. I. No. 13.

Flax wilt has been developing rapidly during the hot weather of the past two weeks, and whole rows of susceptible varieties that came up well on sick land during the earlier cool weather are dying out completely.

Maximum temperature for the first half of June was 93°, recorded on June 15; minimum 41°, recorded on June 4; precipitation 0.72 inch.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May). The plat and nursery stakes were set this week, and the plowing for summer fallow was almost completed. Weeds have emerged in large numbers, although we have less on the Station farm than on the surrounding farms.

In the winter wheat varieties, Minhardi, Minturki, and Buffum No. 17, in the order named, withstood the dry fall and winter better than the other varieties. The plants from bulk seed of the Kanred x Marquis cross and Blackhull almost completely killed out. The Kharkov Selection does not show so well this year as last, although it is perhaps above the average of the varieties in winter survival. The Kharkov Selection may have emerged earlier and suffered more from the fall and winter drought than the other varieties, and there is a possibility that the seed was injured in treating the seed for smut. The

Kharkov Selection seed was treated about two weeks earlier than any of the othe varieties, and since I did not personally treat the seed I do not know whether there were any discrepancies or not.

The awnless winter wheat hybrids of the Kharkov x Ghirka Winter crosses withstood the winter in fine shape. The varieties used in the winter-hardiness test in the nursery did not withstand the winter as well as the hybrids althoug the stand of the winter-hardiness varieties is much better than that of the varieties in the plats.

The condition of practically all of the spring grain under the cereal project is ideal. Almost the only exceptions are Khala spring wheat in the replicated plats and bulk seed of Kanred x Marquis cross in the single plats. The two varieties mentioned do not have good stands.

The precipitation for the month of May was 2.71 inches, and for the first 10 days of June 1.19 inches, or a total of 3.90 inches since May 1. There is an abundance of moisture in the soil now and the prospects for a grain crop could not be better than they are at present. However, the crops are not sufficiently advanced that a drought will not severely cut the yields.

WESTERN BASIN AND COAST AREAS
(North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (L. C. Aicher). No report.

OREGON

Sherman County Branch Station, Moro (D. E. Stephens). No report.

CALIFORNIA

Rice Field Station, Biggs (J. W. Jones). No report.

Plant Introduction Station, Chico (V. H. Florell). No report.

Agricultural Experiment Station, Davis (F. N. Briggs). No report.

Agricultural Experiment Station, Berkeley (W. W. Mackie). No report.

CEREAL COURIER

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 June 30, 1921 No. 15
Personnel (June 21-30) and Project Issue.

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PERSONNEL ITEMS

J. A. Clark will spend July 1 in a tour of the wheat fields around Pendleton, Ore. He expects to leave Moro, Ore., and Washington points about two days ahead of his scheduled itinerary dates.

Prof. John R. Fain, Agronomist of the Georgia College of Agriculture, where this Office is cooperating in cereal experiments, writes as follows under date of June 23:

> "We had the misfortune this morning to lose one of the barns connected with our field work. We lost all of the grain from the large plats that we had just finished threshing. In this lot was about 100 bushels of selected wheat that we had made special effort to grow this year to be able to send out in the State. We were fortunate, however, in not losing any records, or in losing the head and rod rows. It will probably take us some time to get things in shape and sufficient equipment together to finish the threshing."

Robert E. Fennell has been appointed field assistant in barberry eradication in Iowa, effective July 1, 1921.

J. R. Holbert arrived in Washington on June 23, where he has been engaged in the preparation of manuscript. He returned to Bloomington, Ill., on June 28.

Dr. Theodore Holm, translator, has resigned effective June 30, 1921.

Dr. A. G. Johnson left for Madison, Wis., on June 28, after a series of conferences in Washington.

Dr. C. E. Leighty returned to the Office on June 22 from a ten-day trip to Illinois and Missouri.

R. W. Leukel left for Madison on June 27, after having completed note-taking and other duties at Arlington Farm, in connection with his study of the eelworm disease of wheat and rye.

Leslie C. Meredith, laborer in cereal investigations at Chico, Calif., has resigned effective June 4, 1921, on account of ill health.

Ferd S. Wolpert has been appointed field assistant in cereal disease control, effective July 1, 1921, and assigned to the flag smut project at Granite City, Ill.

MANUSCRIPTS AND PUBLICATIONS

On June 24, a manuscript entitled "A Note Relative to the Recent Appearance of the Sugar Cane Downy Mildew in the Philippines," by W. H. Weston, Jr., was approved for publication in Phytopathology.

A manuscript entitled "Kanred Wheat," by J. Allen Clark and S. C. Salmon, was submitted on June 21 for publication as a Farmers' Bulletin.

A manuscript entitled "Rust Resistance in Winter Wheat Varieties," by Dr. Leo E. Melchers and Prof. John H. Parker, agents of this Office at the Kansas station, was submitted on June 30 for publication as a Department Bulletin.

Page proof of the Journal of Research paper entitled "Two Sclerotium Diseases of Rice," by Dr. W. H. Tisdale, is being read today.

Farmers' Bulletin 1212, "Straighthead of Rice and its Control," by Dr. W. H. Tisdale and J. Mitchell Jenkins, has just been received from the Government Printing Office.

OAT INVESTIGATIONS

Fairfield oat in Indiana

Prof. A. T. Wiancko, Chief in Soils and Crops at the Purdue University Agricultural Experiment Station, writes that it has been decided to increase and distribute a new variety of oats which has been listed as No. 37, but which is now named "Fairfield" after the township in which the principal test farm of the Purdue station is located. This oat has been developed from Selection No. 50a1-20-7 from the Sixty-Day x Probsteier cross made by Mr. J. B. Norton, of which seed was sent to the Purdue station by Mr. Warburton in 1909.

Winter Oats at Arlington Farm, Va.
(T. R. Stanton)

The harvesting of an excellent crop of winter oats at the Arlington Farm was completed on June 23. Owing to the extremely mild winter no winterkilling occurred in any of the varieties. As a rule, if the early varieties such as

Fulghum, Aurora, etc. are good, the later varieties such as Culberson and Winter Turf, particularly the latter, are not so good, and vice versa. However, this season excellent results will be obtained from all of the varieties. The ideal ripening and harvesting weather since June 1 was especially favorable to the late varieties. The writer since his connection with Arlington Farm has never seen better looking Winter Turf oats. In the field plats the plants averaged about 50 inches high and were in perfect condition, with no rust or discoloration of any kind whatever.

The earlier varieties, particularly the Fulghum, were injured somewhat when in the late milk and soft dough stage by bobolinks. In most years these birds arrive at about the time when barley is in the late milk stage and feed upon it in preference to the oats. This year, however, the barley was too far advanced and consequently they attacked the Fulghum oats which apparently were just at the proper stage to tickle their palates.

In the nursery some of the selections from crosses of which Winter Turf is one of the parent varieties, were again promising. A comparatively large number of F_2 plants from crosses between Culberson and Fulghum, Hutcheson selection and Fulghum, and Aurora and Hutcheson selection, were grown, and it is hoped that some hardier strains of the Fulghum type than those now available may be developed from them.

About 150 strains including Fulghum, Red Rustproof, Winter Turf, and Culberson varieties, seed of which was obtained last year from seedsmen and experiment stations in the South, were grown in single rod rows. For the most part these were true to type, but many of them contained a high percentage of mixture of other varieties. The Fulghum strains as a whole were the purest.

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C E R E A L C O U R I E R

Official Messenger of the Office of Cereal Investigations,
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(NOT FOR PUBLICATION)

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Vol. 13 July 10, 1921 No. 16
Personnel (July 1-10) and Field Station (June 16-30) Issue.

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PERSONNEL ITEMS

Dr. C. R. Ball is author of the treatment of the willows in the revised edition of the "Trees of Indiana," by Charles C. Deam, State Forester, and in the "Flora of Glacier National Park" (Contrib. U. S. Nat. Herb. 22), by P. C. Standley, both of which appeared in April. He also has a paper entitled "Some Undescribed Species of the Section Cordatae" in the June issue of the Botanical Gazette.

F. F. Blaine, who has been assisting in note taking and harvesting the smut experiments on Arlington Farm, has completed that work. He has been transferred to the Office of Plant Disease Survey to assist in the potato-wart survey in West Virginia and Maryland.

C. H. Kyle left Washington July 5 for Florence, S. C., to supervise the hand pollination of corn and to take notes on the experiments which are being conducted cooperatively with the South Carolina Agricultural Experiment Station.

Miss Ada D. Miller left Washington July 2 for a month's vacation in Mississippi.

Fred D. Richey left Washington July 6 for Burdette, Ark., to hand pollinate corn in his experimental plats there and to take notes on the experiments. He will stop en route at Urbana and Bloomington, Ill., to study the corn experiments at those points.

T. R. Stanton left Washington July 3 for Ames, Iowa, to study the oats in the classification nursery and to take notes on the cooperative experiments with oats on the Iowa Agricultural Experiment Station. He reports that a storm on June 26 lodged the oats in the nursery so that a study of the varietal characteristics will be very difficult. The oat crop in Iowa is poor, as stands are thin and the straw in many fields is very short. Corn has been growing rapidly during the recent hot weather and some fields are already in tassel. From Ames Mr. Stanton will go to Aberdeen, Idaho, for a study of the oat classification nursery there, stopping en route at several of the experiment stations in the northern States.

Dr. W. H. Tisdale left Washington July 7 for Bloomington, Ill., where he will inoculate a number of varieties of corn for the purpose of making a study of their behavior towards smut. He will then go to Urbana, Ill., to confer with experiment station officials regarding the flag smut situation, and from there to Madison, Wis., St. Paul, Minn., and Fargo, N. Dak., to confer regarding cereal disease experiments. After these conferences he will visit the agricultural experiment stations in Idaho, Washington, Oregon, and California to inspect the cooperative experiments for the control of bunt. On the return trip he will stop at Hays and Manhattan, Kans., and Lincoln, Neb., to study the corn and sorghum smut problems, and at Granite City, Ill., to confer with field men regarding the flag smut situation. He will probably return to Washington about September 1.

VISITORS

Miss Janet M. Wilson, who formerly assisted in western wheat investigations, and who is now taking the nurses' training course at Johns Hopkins University Hospital, Baltimore, Md., was an office visitor July 8.

PUBLICATIONS

A manuscript entitled "A Cytological Study of Infection of Early Baart and Kanred Wheats by *Puccinia graminis tritici*," by Dr. Ruth F. Allen, was submitted July 8, for publication in the Journal of Agricultural Research. This study was conducted in cooperation with the California Agricultural Experiment Station. A brief preliminary paper entitled "Resistance to Stem Rust in Kanred Wheat," by Dr. Allen was published in Science, vol. 53, pp. 575-576, June 24, 1921.

Meeting of Western Agronomists.

Tentative programs have been received for the meeting of the Western Agronomists' Association at Tucson, Ariz., August 24 to 26. Besides the presentation of papers, the plans include visits to the irrigation project and farms of the U. S. Indian reservation in the vicinity of Tucson, to University Farm, Tucson Farms Co., the Casa Grande Valley, the experiment farms at Sacaton and Mesa, Ariz., the State Experiment Farm at Mesa, and a portion of the Salt River Valley irrigation project. The program committee consists of G. E. Thompson, agronomist of the University of Arizona, Tucson, Ariz., chairman; Roland McKee, Office of Forage Crop Investigations, Washington, D. C.; and B. A. Madsen, University of California, Berkeley, Cal.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens, and Substations (R. A. Chilas). The agronomy barn at Athens was destroyed by fire June 23. All grain from the varietal and other field experiments was burned. We had thrashed everything except the varieties of barley and one fertilizer experiment with oats, so have the data on this year's yields on all tests except those mentioned and the varieties of oats. We had just finished thrashing the oats the afternoon before and had only a few of them weighed.

I have selections from most of the varieties that were grown in rod rows and duplicate 66-foot rows this year. These were in another barn so are safe and only a few varieties will be lost.

I have just returned from Tifton, where I had gone the day of the fire. The yields there are very good and I will be able to replace some of varieties here with material from that place. The work at Tifton is in good shape, and I think we will be able to get some good work done there, as the young man who has been working with me for the past year has just gone there as agronomist.

SOUTH CAROLINA

Pee Dee Substation, Florence (Hugo Stoneberg). No report.

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor). The showery weather of the past week has somewhat delayed the thrashing of the cereal crops. Barley and oats, however, were thrashed in good condition. The barley yields will be poor, but the oat yields excellent. Some varieties will undoubtedly exceed the maximum yields previously recorded at Arlington Farm.

The thrashing of the rod-row selections of rye was started this week, but the work is slow as considerable difficulty is always experienced in obtaining satisfactory results from the machine used in this work.

During the past two weeks the high temperature and abundant supply of moisture has partially overcome the serious handicap sustained earlier by corn on Arlington Farm. Some poor stands and the lateness of some plantings still remain as evidence of an abnormal season. With favorable conditions for the rest of the season most of the breeding work should be a success.

NEW YORK

Cornell University Experiment Station, Ithaca (H. H. Love). No report.

Rhinebeck (Corn Investigations) (L. S. Mayer). (June 23) The drought period, now in its fourth week, is still unbroken. Gardens are suffering, and hay and small grains are being seriously affected. Unless rain in plenty comes very soon the oat crop that promised so well will be very short in this vicinity. Haying has begun much earlier than usual, owing to the dry period. Corn has stood the weather well but is beginning to show the need of moisture, especially on the lighter soils. Cool nights have tended to check growth

somewhat. Cultivation has proceeded steadily and we have just completed thinning and hoeing. Our corn fields have rarely looked so clean at this time as they do this year.

(July 1) The long and serious drought which has prevailed throughout this entire eastern section since the last week of May was broken Tuesday, June 28, by a heavy storm in the afternoon. During the 24 hours between midnight Tuesday and midnight Wednesday, June 29, over an inch and a half of rain fell. We have had rain more or less every day since then. This dry period has extended generally over eastern New York and New England and has been the most serious one experienced in several years.

As a result of this abnormal lack of rainfall the hay crop has been reduced about 50 per cent. The oat crop is very short, some farmers being forced to cut it for hay. The fruit crop is seriously reduced, especially the small fruits. The dry weather drop of apples has been very large.

Corn has withstood the drought fairly well but has been held back materially, cool nights being as much a factor as lack of moisture. Corn cultivation has continued and the fields look well under the circumstances.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Crowley Rice Station, Crowley (J. Mitchell Jenkins). Everything is getting along very nicely on the station. Good weather has enabled me to have all soybeans thoroughly worked, and has resulted in good germination of all late plantings of soybeans. Rices are growing well, and are all now ready for water, save a few late seedings. The stand on the fertilizer plats is not particularly good in certain places, especially where acid phosphate was applied. The indications are that the seed was slightly damaged by the acid on account of dry weather delaying germination. There is a marked difference in the appearance of plats to which different fertilizers were applied. The most noticeable difference is noted where acid phosphate was applied, especially as regards color and general vigor of both rice and grass. If anything should prevent the application of water within the next few days, the acid phosphate plats will be overrun by grass and sedge.

In traveling to Lake Arthur on the 24th, I noted that the rice acreage is much smaller than in previous years. The crop as a whole is rather far advanced for this season of the year, and appears to be quite free of weeds. This is evidently due to the fact that the best portions of each farm have been seeded. I noted a decided increase in the acreage of corn over the past two years. This crop is also good, and far advanced. The dry weather of June is responsible in a large measure for the condition of the corn crop.

I am told that in Texas much of last year's rice crop was not hauled to the warehouse after thrashing, but was left in the field, covered with straw and tarpaulins, where it still remains. The rice is in good condition, but is being destroyed by rats to a considerable extent.

In the vicinity of Crowley, a few fields of early rice will be ready for harvest the middle of next month. These are early maturing rices, sown early in March or the end of February, and comprise only a small portion of the entire crop.

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler). Hot, dry weather from June 15 to 20 ripened the wheat crop very rapidly all over the State. Our wheat on the station field was harvested on the 16th, 17th, and 18th. We obtained good yields from several varieties, particularly from improved Poole and Fulcaster strains which we are multiplying for distribution.

Leaf rust was very common on the wheat but there was practically no stem rust. We are now harvesting our oats plats and will finish this week. Early oats will give fairly good yields this year but the later varieties have been ripened very rapidly by the last two or three days of extremely hot, dry weather. The yields of these varieties will be rather poor.

Oats over the State as a whole are disappointing. Corn is growing well.

Dr. C. E. Leighty visited the station on June 18, but was able to remain only a short time.

IOWA

Agricultural Experiment Station, Ames (L. C. Burnett). Crops have grown very rapidly during the last two weeks. All of the corn in this section is laid by. A few fields are 6 feet high and have the brace roots well started. Rains on the 26th and 28th have lodged all of the cereal nursery and a great many of the oat plats. The winter wheat was too far matured to be damaged. Our great trouble with the wheat now will be the mud under the bull wheel of the binder.

Rain on the night of the 28th blew down a great deal of corn but it is likely this will straighten up. The wheat cutting was begun on the 28th and should be completed before the end of the first week in July. Early Champion and Burt oats will be ready to cut by the 5th. All of the six-rowed barleys will be ready to harvest before the end of the first week in July. Harvesting in the nursery will probably be started on the 5th.

INDIANA

Purdue University Agricultural Experiment Station.

Corn Root, Stalk, and Ear Rots (G. N. Hoffer). No report.

Leaf Rust Investigations (H. S. Jackson and E. B. Mains). No report.

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson). No report.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations) (E. C. Stakman). No report.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger). The last week of June was the only dry weather of the month. Wheat harvest is almost over now, as the one week of harvesting weather was used to advantage.

Sorghums of the cereal project are making rapid growth and the entire project is in good shape at present. Thinning is fairly well along, and the

next work is to trim the plats and count the stands. The sixth date-of-seeding plats were seeded today. First heads are appearing in the Red Amber and Dwarf milo sown on the first date.

On June 28, Mr. C. J. Stauber arrived at the station with 12 head of registered Holstein cattle. Mr. Stauber will have charge of the dairy work at the field station.

The maximum temperature for the last half of June was 95° on June 28, while the minimum temperature for the same period was 63° on June 16 and 29. The precipitation for the last half of the month was 1.86 inches, or a total of 5.78 inches for June.

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker). (June 25) Some severe wind and dust storms occurred in central Kansas and even as far east as Manhattan in early spring, resulting in injury to a large acreage of wheat and abandonment of a considerable acreage. Several severe frosts or freezes occurred during April and early May, which further injured much of the wheat and caused very severe injury to alfalfa and spring-sown barley and oats. The alfalfa was further injured by green bugs or aphis, resulting in the loss of many good stands. The rainfall over the State was rather plentiful during May until the latter half of the month, when the weather turned warm and dry in the heart of the wheat belt, resulting in unusually early burning of the crop in some localities.

The weather during the first week in June was warm, temperatures as high as 100° in some parts of the State causing some additional injury to wheat. During the second and third weeks of June rains have been frequent and have interfered with harvesting to some extent, which was general a week or more earlier than usual. The total wheat production for Kansas is variously estimated from 102,000,000 to 130,000,000 bushels. It is probable that it will be at least 115,000,000 bushels.

Soft wheat has been injured to some extent by red leaf rust in eastern Kansas and crown rust of oats is unusually severe. Stinking smut or bunt is quite generally distributed over the State again this year and is serious in some of the Kanred fields sown with smutty untreated seed.

The spring nursery includes 12 varieties of barley grown in replicated rod rows, 10 varieties grown in single rod rows, and 33 selections from hybrids received from the South Dakota Agricultural Experiment Station, also grown in single rod rows.

Fifty varieties and strains of oats are being tested in replicated rod rows and 67 in single rod rows. Two hundred twenty selections of Burt, Kansas Fulghum, and Red Rustproof are being grown in 8-foot rows in a smut-resistance experiment. All of these selections have been inoculated with smut for the past two years and all remained smut free. Only those which are smut free or nearly so this year, the third season, will be grown next year. Twenty varieties of oats are being grown in triplicate rod rows sown with inoculated seed and the amount of smut and its effect on yield determined. The selection experiments with Burt oats are being continued. An "economic series" consisting of selections made for probable practical value, is being grown, and a "genetic series" containing selections made to study the inheritance of various characters is also being grown. In the nursery, Burt was the earliest variety

to ripen, followed by the early Sixty-Day oats. Kansas Fulghum is distinctly later than Burt but is very much earlier than the ordinary Red Rustproof oats. Ferguson No. 71 is especially late and will hardly make a crop. At the farm, on the other hand, Kansas Fulghum has ripened as early as Burt. Iowar, a new oat distributed by the Iowa Station, is too late to be of value in Kansas.

Harvesting the replicated rod rows in the winter wheat nursery was practically completed this week. Of the 200 8-foot rows of Kanred X Marquis hybrids, about [illegible] selections, mostly of the awnless type, have been selected for sowing in single rod rows in the nursery this fall. These represent the most hardy types and those which appear most promising. The winter hardiness nursery, containing about 2,000 rows of selections of F_2 and F_3 of crosses of hardy varieties such as Odessa, Buffum No. 17, Minhardi, and Minturki with Kanred and other standard varieties of hard winter wheat, is not yet ripe, but with clear warm weather harvest should be completed by the end of June. A study of the inheritance of winter hardiness in five crosses will be made and the material from the other crosses will be grown in bulk at two or three northern stations next year.

Wheat harvest was completed at the Agronomy Farm this week. Kanred and Clark Blackhull both look promising and will probably outyield other varieties. A considerable acreage of Clark Blackhull is now being grown. Indications are that this variety is not as winter hardy as Kanred and the first hard winter will probably reduce the acreage automatically.

Field inspection of Kanred wheat and Kansas Fulghum oats has been completed except for some fields of Kanred in extreme northwestern counties which will be inspected the last week in June. This was nearly all done by members of the staff of the Agronomy Department and the two extension crops men instead of by students and assistants as in previous years. Kanred is again manifesting a remarkable degree of resistance to leaf rust in all sections of the State. Kansas Fulghum oats, however, is heavily infected with crown rust and is as susceptible or more so than Red Rustproof. When inoculated with smut, Kansas Fulghum remains much freer than most varieties of white oats but several fields of Fulghum have been inspected which had 10 per cent of smut, hence the variety can hardly be called highly resistant or immune. About 40 acres of Kansas Fulghum is being grown at the Agronomy Farm and the crop will be sold for seed next spring.

At a recent meeting of the directors of the Kansas Crop Improvement Association, a scale of prices for Kanred seed wheat and Kansas Fulghum oats for seed was fixed. The Kanred prices range from $1.50 per bushel for "country run" or uncleaned seed in car lots to $2.50 for recleaned sacked seed in small quantities. Kansas Fulghum oats will be sold at $1.25 per bushel for uncleaned seed in car lots, and $1.50 for recleaned sacked seed.

Mr. J. A. Clark spent the week of June 6 to 11 in Kansas. June 6 was spent in Johnson County with Professor Salmon for the purpose of looking over fields of Harvest Queen wheat and getting information on the origin of this variety. June 7 to 10 were spent at Manhattan in inspecting nursery and field experiments, and June 11 was spent at the Hays Branch Station. Mr. John H. Martin arrived at Manhattan on June 16 and is engaged in taking notes, making selections, and harvesting the winter hardiness nursery. He expects to leave about July 4 for Akron, Colo., and other field stations. Dr. E. C. Stakman and Dr. A. G. Johnson spent June 13 at Manhattan.

Mr. Paul C. Mangelsdorf, who has been assisting in the crop improvement project, left on June 24 and will report at the Connecticut station July 1 for work in corn breeding under Dr. D. F. Jones, a graduate of K.S.A.C. Mr. Karl S. Quisenberry has accepted a position as instructor in agronomy and assistant in plant breeding at the West Virginia college and station and will report at Morgantown on September 1.

Hays Branch Station, Hays (A. F. Swanson). The latter half of the month has been free from rain, so that it has been possible to do satisfactory field work.

All of the small grains on the cereal project have been harvested except the spring wheats. The spring wheats will be ripe in a day or two but are suffering from dry weather. Thrashing on the cereal project will begin next week.

Both the varietal and the head-to-row fields of sorghums have been thinned and cultivated and are about ready to be laid by.

Harvest is about one-third completed in this section. Apparently, sufficient men are available to take care of the crop at a wage scale of $5.00 per day.

We are having a heavy epidemic of stem rust on oats this year and there will be some damage from this source.

COLORADO

Akron Experiment Farm, Akron (F. A. Coffman). The dry weather which prevailed throughout May, continued through the entire month of June. The total precipitation for the seventy-five days, April 16 to July 1, has been less than 2 inches. No storms giving as much as .25 inch of rain were received during the entire period. Only one rain of more than one-fifth inch was recorded. During the last few days of June the weather has been intensely hot, and windy. This has been one of the longest dry spells in the history of Akron Field Station. The drought, however, is not a general one, but seems to be most severe in the section in which Akron, and Akron Field Station, are located. Heavy local showers have prevented or greatly relieved the drought in nearly all other sections of eastern Colorado. In some sections too much rain has been received. The locality, some 10 miles square, in which Akron Field Station is in almost the center, is possibly as dry as any part of eastern Colorado, if not much drier. The total precipitation for June was 1.06 inches.

In spite of the severe weather conditions, crop prospects in this section as far as fall grains are concerned are fair. Much of the wheat in this section will yield from 12 to 15 bushels. One field of over 100 acres of Kanred, on summer fallow, looks especially good. Several farmers have predicted that the entire field will average better than 30 bushels to the acre. Very little spring grain was sown in this section this year. One field of spring durum wheat looks as though it might yield 10 to 12 bushels. Winter wheat which was stubbled in has made a very poor showing. It seems probable that this season's experience will be a very good object lesson to those farmers who have been following the practice of stubbling-in wheat year after year on the same ground. Harvest of winter wheat in this section will start about July 5.

Corn and row crops are looking especially well at this time. The warm weather we have had during the past two weeks has allowed corn to make a maximum of growth. This cannot continue for long, however, as the soil is nearly drained of all moisture, and during the past two days the leaves of the corn have rolled badly. In one field of corn near the station, the stalks are more then "knee high."

Work on Akron Field Station is in good condition. Only a few days' work will be necessary for us to be cleared away ready for harvest. Weed growth has been kept well within control and all of the experimental areas on the station are comparatively free from weeds. Harvest of experimental plats of fall grain will not start much before July 5. Some few plats of winter rye may be cut before the end of the present week. While as a whole our yields will be lower than in 1920, some very good yields will very probably be produced by plats grown on summer fallow. Although the season has been more droughty, better yields than were harvested in 1917, 1918, or 1919 may quite reasonably be expected, judging by present prospects.

The annual station picnic was held June 25. Possibly 2,000 people were on the station grounds during the day. The day was spent in visiting the various station projects, listening to addresses by Professor Morton of the Colorado Agricultural College, and Mr. Ford of the Agricultural Department of the Burlington Railroad, and in watching the different events on the "Sports" program. This was estimated to be the largest number of persons ever to have attended a station picnic at Akron. As the picnic was held on Saturday, it was almost strictly a crowd of farmers and their families.

WYOMING

Cheyenne Experiment Farm, Cheyenne (A. L. Nelson). No report.

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel). No report.

Dickinson Substation, Dickinson (Ralph W. Smith). No report.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.). No report.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May). (June 28) The precipitation for the first 28 days of June was 2.30 inches, which is somewhat less than normal. However, the soil is unusually well supplied with moisture because rains have fallen frequently all spring and summer. Crop prospects are good but there is sufficient time yet for yields to be severely cut by drouth.

Fall-sown wheat and the earliest varieties of spring wheat, barley, and oats began heading during the past week. A few of the selections in the barley nursery are cut in full head. Blackhull and Kharkov (Mont. No. 36, C.I. No. 5549) were the first winter wheat varieties in the plats to head, while in the winter nursery the hybrid crosses Nos. 1653 and 1637 were the first to head. Prelude, Hard Federation, White Federation, and Quality were the first spring wheat varieties to head. Judith and Mariout barleys and the Sixty-Day oats were the earliest of these grains to head in either the nursery or plats.

Some of the winter wheat plats which winterkilled badly have quite a number of weeds but not as much as might be expected for this section. All of the spring grain except flax is unusually free of weeds. Weeds are becoming quite a menace to the growing of fall-sown wheat in the Judith Basin and many spring-sown fields are badly infested with weeds this year.

Thursday, July 28, has been chosen as the day for the Judith Basin Farmers' Picnic which is held annually on the station grounds. Supt. Albert Osenbrug left here on Friday, June 24, on an official trip to the Northern Great Plains Field Station, Mandan, N. Dak.

WESTERN BASIN AND COAST AREAS
(North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (L. C. Aicher). No report.

OREGON

Sherman County Branch Station, Moro (D. E. Stephens). We have had no rain of consequence during June, but most of the winter wheat in this section appears to be ripening about normally. On the shallower soils there is considerable burning and continued warm weather will probably reduce yields of the wheat on the deeper soils. I expect that our yields will be about as good as last year, perhaps a little better. On the station winter wheat is looking fine, but the spring grains have been very backward. We shall begin cutting our winter wheats early in July. The winter wheats will likely all be in the shock by July 15 and the spring wheats will be ripe about that date.

CALIFORNIA

Rice Field Station, Biggs (J. W. Jones). The weather has been changeable during the month of June. The maximum temperature was 107° on June 23; the minimum temperature was 50° on June 1; there were only three days during the month when the temperature reached 100° or above.

From June 6 to 12 most of the rice on the station was hoed, previous to submerging, to kill part of the water grass. All experiments, except water-grass control, were submerged from June 14 to 18.

The stands on the various experiments are good, except that the water-grass control experiments are a little thin. Rice is growing rather slowly but has a good color.

At present we are pulling water grass and plowing for fallow.

Plant Introduction Station, Chico (V. H. Florell). All grain has been harvested with the exception of the nursery date-of-seeding experiments. The barley varieties in field plats were harvested the first week in June and the wheat varieties about June 15. Harvesting of the individual plant hybrid wheat material was completed yesterday. The field plats have been thrashed and the thrashing of the nurseries is in progress. The yields this season are very low but the quality of the grain is good. Yields in bushels per acre of barley and wheat in replicate plats follow. The wheat varieties were each grown in five fiftieth-acre plats, and the barley varieties in four fiftieth-acre plats.

WHEAT

Variety	C. I. No.	Bu. per acre	Rank
Sonora	3622	19.0	1
White Australian	3019	18.0	2
Early Baart	1697	17.4	3
Federation	4734	17.3	4
Canberra	4986	16.7	5
Pacific Bluestem	4067	16.7	5
Marquis	4136	16.4	7
Little Club	4066	16.1	8
Hard Federation	4733	15.8	9
Bunyip	5125	15.5	10
Kharkof	1442	12.5	11
White Federation	4980	12.2	12

BARLEY

Variety	C. I. No.	Bu. per acre	Rank
Arequipa	1256	40.6	1
Coast	690	34.3	2
Poda	652	32.0	3
Mariout	261	29.5	4
Kopeck	869	29.2	5
Beldi	190	27.7	6
Trebi	936	26.4	7
Tennessee Winter	257	25.7	8
California Mariout	Calif.2241	25.2	9
H-6	1286	23.1	10
Smyrna	195	20.3	11

Agricultural Experiment Station, Davis (F. W. Briggs). No report.

Agricultural Experiment Station, Berkeley (W. W. Mackie). No report.

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CEREAL COURIER

Official Messenger of the Office of Cereal Investigations
Bureau of Plant Industry, U.S.Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 July 20, 1921. No. 17
Personnel (July 11-20) and Field Station (July 1-15) Issue.

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PERSONNEL ITEMS

Frank G. Beyschlag has been appointed Field Assistant in the barberry eradication campaign in Iowa, effective July 6, 1921.

Carl W. Bower has been appointed Field Assistant in the corn disease investigations in Kansas, effective July 13, 1921.

Abner J. Brictson has been appointed Field Assistant in the barberry eradication campaign in South Dakota, effective July 1, 1921.

Dr. E. J. Butler, Director of the Imperial Bureau of Mycology, Kew, England, left Washington July 9 for points in New York, Connecticut, Massachusetts, Canada, Michigan, Illinois, and Minnesota.

A. C. Dillman, in charge of flax investigations, expected to leave Mandan, N. Dak., on July 17. His itinerary is about as follows: July 18, Dickinson, N. D.; July 19, Williston, N. Dak.; July 21, Havre, Mont.; July 23, Moccasin, Mont.; July 26, Bozeman, Mont.; July 27, Huntley, Mont.; July 29, Mandan, N. Dak.

Rudolph S. Frigstad's termination of appointment was revoked, and he was reappointed effective July 1, 1921, as Field Assistant in the barberry eradication campaign in Minnesota.

Kenneth R. Grant has been appointed Field Assistant in the barberry eradication campaign in Iowa, effective July 6, 1921.

John S. Holmes was appointed Field Assistant in the barberry eradication campaign in Iowa, effective July 6, 1921.

Dr. H. B. Humphrey left Washington July 15 for Madison, Wis., St. Paul, Minn., Fargo, N. Dak., Moscow, Idaho, Pullman, Wash., Corvallis, Oreg., Berkeley, Cal., Denver, Colo., Manhattan, Kans., Bloomington, Ill., Ames, Iowa, and LaFayette, Ind., to confer with collaborators, agents, and others engaged in cereal disease investigations, and to collect cereal disease fungi, especially rusts. He plans to attend the cereal disease conference and summer field meeting of the American Phytopathological Society, July 19-22, inclusive, to be held at St. Paul, Minn., Fargo, N. Dak.

Dr. Annie May Hurd left Washington July 14 for LaFayette, Ind., Bloomington, Ill., St. Paul, Minn., and Fargo, N. Dak., for the purpose of studying the diseases of corn and wheat with special reference to resistance as affected by different types of soils and fertilizers, and by varietal crossing and selection, and conferring with station officials. Dr. Hurd plans to attend the cereal disease conference and summer field meeting of the American Phytopathological Society, July 19-22, inclusive, to be held at St. Paul, Minn., and Fargo, N. Dak.

Dr. F. E. Kempton left Washington July 11 to inspect field work in barberry eradication in Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, North Dakota, South Dakota, Nebraska and Iowa.

Edwin J. Kohl has been appointed Temporary Assistant in the corn disease investigations at West Lafayette, Indiana, effective July 20, 1921.

Dr. C. E. Leighty left Washington July 10 for Ithaca, N. Y., to study wheat hybrids and selections being grown in the cooperative experiments at the Cornell University Agricultural Experiment Station, and to inspect fields of new wheat varieties resulting from these experiments.

Kirk Mears was appointed, July 1, 1921, as Field Assistant in the barberry eradication campaign in South Dakota.

Marion T. Meyers, Field Assistant in the barberry eradication campaign in Ohio, resigned effective July 1, 1921, to accept a position with the Ohio State University.

Miss Ada D. Miller, in charge of payrolls and salary vouchers, who is on leave at her home in Mississippi, resigned effective July 23. She was married on July 16 to Mr. Rex R. Ray. The best wishes of the office are extended.

Edwin W. Pohle has been appointed Field Assistant in the barberry eradication campaign in Iowa, effective July 20, 1921.

Donald R. Porter has been appointed Field Assistant in the campaign for the eradication of the common barberry in Iowa, effective July 6, 1921.

Warner T. Robling has been appointed Temporary Assistant in the investigations of corn diseases at West Lafayette, Indiana, effective July 20, 1921.

Howard W. Sechrist has been appointed Field Assistant in the barberry eradication campaign in Iowa, effective July 6, 1921.

William N. Steil has been appointed Field Assistant in the barberry eradication campaigg in Wisconsin, effective July 11, 1921.

Robert E. Sylvester has been appointed unskilled laborer to assist with the flax investigations at the Northern Great Plains Station, Mandan, North Dakota, effective July 20, 1921.

Henry M. Trepanier, who was Field Assistant in the campaign for barberry eradication in No. Dakota, was drowned June 25, 1921.

C. W. Warburton left Washington July 17 for Ithaca, N. Y. and other points in New York to inspect the cooperative experiments with oats at the Cornell University Agricultural Experiment Station.

MANUSCRIPTS AND PUBLICATIONS

Page proof of Farmers' Bulletin 1226, entitled "The Take-all Disease of Wheat and Its Control," by Harry B. Humphrey, Aaron G. Johnson, and Harold H. McKinney, was read on July 9.

Galley proof of a paper entitled "The Relation of Crop-plant Botany to Human Welfare, "by Dr. C. R. Ball, was read on July 11. The paper will appear in the American Journal of Botany.

A short paper entitled "The Use of the Greenhouse in Corn Breeding," by Fred D. Richey, was approved on July 11 for publication in the Journal of Heredity.

A popular paper entitled "The Selection and Care of Seed Corn," by H. S. Garrison, was approved on July 2 for publication in the agricultural press.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens, and Substations (R. R. Childs). No report.

SOUTH CAROLINA

Pee Dee Substation, Florence (Hugo Stoneberg) (July 15) The weather conditions, with frequent showers during the first half of July, have been very favorable for the rapid advancement of all crops. The corn crop is tasseling and silking and the cotton is blooming. Tobacco curing has started.

Prof. H. W. Barre, director of Research in S. C. inspected the station July 7.

Mr. C. H. Kyle arrived from Washington D. C. July 6th to attend to hand pollinating and take notes on the corn breeding experiment.

The earliest strains in the corn breeding plat began tasseling July 1. Since then the number has increased rapidly until now we are very busy cutting back, bagging the shoots and hand pollinating from five o'clock in the morning until seven o'clock in the evening - seven days in the week. The plants do not stop sending out new tassels and silks even on Sunday. There are many interesting things to be seen in the various ear rows. Several have come pure for certain characters.

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor). (July 15) The thrashing of the varietal plats of cereals has progressed rapidly despite the numerous showers which have favored us of late. By the end of the present week all wheat in plat test will be in sack. Time has not yet been taken to figure the yields of all the plats. The winter oat crop as mentioned by Mr. T. R. Stanton in the Cereal Courier of June 30th was exceptional. Winter Turf C. I. 541-4 will top the best with an average for three 1/40 acre plats of 100.4 bu. per acre, while Fulghum C. I. 708 will rank near the bottom with an average of 43.4 bu. per acre due largely to its "palatibility to the bobolinks."

Wheat is not yielding well. The check, Purple Straw C. I. 1915, will average about 14 bu. per acre below its 1910-1920 average. Poorly filled heads are the main cause for this low yield. Some of the finest wheat thrashed the present season was obtained from the plats sown with the electrically treated seed. The quality and yield, however, appear to be in no way connected with the treatment of the seed. The detailed results of this experiment will be reported in the near future.

The seed treatment experiment in which Seed Protecto and Formaldehyde were used on Purple Straw, C. I. 1915, inoculated with T. laevis spores by Dr. G. M. Reed was thrashed June 14. Yields on the 6 plats of 1/40 acre each in the test are uniform as may be seen from the figures:

Check	Bu. per acre	Av. bu. per acre
Plat No. 1	4.6	4.8
Plat No. 4	5.0	
Formaldehyde treated		
Plat No. 3	15.8	
Plat No. 6	17.1	16.4
Seed Protecto treated		
Plat No. 2	13.8	
Plat No. 5	16.3	15.0

Stinking smut balls composed at least 50 per cent of what was obtained from the check plats. The percentage of smut in the different plats has been obtained by Miss Marian Griffiths and will be reported later.

Weather data obtained at Arlington Farm are as follows:

June 15 -30	Max. temperature	96°
	Min. "	53°
	Rainfall	3.36 inches.
July 1 - 15	Max temperature	96°
	Min "	68°
	Rainfall	2.49 inches.

NEW YORK

Cornell University Experiment Station, Ithaca (C.E.Leighty)(July 19). The harvesting of wheat and barley was finished the week ending July 16, and some of the ripest oats were cut. Harvesting of oats began in the garden on Monday morning. A good rain fell the night of July 14 and the morning of July 15, amounting in all to more than 1½ inches. This broke a drought of several weeks duration which had resulted in considerable injury to crops, the oats being short on this account. The corn had been wilting badly during the day, it being necessary to irrigate in some of the drier spots in the plant breeding garden.

The oat plat at Batavia was cut Friday and the plats in the northern part of the State will be cut during the week beginning July 18. Oats are generally somewhat short throughout the State, but in some sections good crops will be harvested. Wheat was somewhat affected by the hot dry weather and probably will not yield as well or be of as good quality as last year.

Rhinebeck (Corn Investigations, L.L.S.Mayer). (July 17) At the time of my last report two weeks ago we had just had our first rains after a drought of over a month. During the past two weeks the weather has been very hot and humid. The corn grew from an average height of 3 feet to from 7 to 8 feet with a consequent weakening of stalk. I began detasseling July 11th. On July 14 a heavy wind laid some of the corn low and a severe thunder storm the next day completed the downfall. This damage to corn prevails over most of Eastern New York.

I am trying to save a portion of my breeding block by staking and tying up the hills. Such a method as this would of course be impossible except over a very limited area. Undoubtedly some of the corn will right itself.

The lodging of the corn is due primarily to its over rapidity of growth, for a general examination of the field shows little evidence of root rot.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Crowley Rice Station, Crowley (J. Mitchell Jenkins). (July 8) We have been pumping for the past two weeks, and have everything practically flooded. The continued dry weather has made pumping operations exceedingly expensive during the past month. We have been having exceedingly high temperatures for the past several days, and on the 6th, the maximum was ninety-eight. Yesterday afternoon, we had a light rain, and the temperature has greatly fallen.

(July 12) We had a very beneficial rain the latter part of last week, extending over a period of three or four days, and amounting to about two and one-half inches. This has enabled me to flood all rices to the required depth and after today, I will cease pumping for several days.

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler). No report.

IOWA

Agricultural Experiment Station, Ames (L. C. Burnett). (July 16) The season has advanced very rapidly during the past two weeks. The small grain will all be out by the night of the 16th. Nursery threshing is already started and we expect to start the plat threshing next week. The crops were badly damaged by hot weather.

Mr. Stanton left Friday night for Aberdeen, Idaho.

T. R. Stanton writes as follows under date of July 12:

A rather poor crop of oats apparently is being harvested in Iowa this year. Indications are that the yield and quality of the crop will be poorer than was expected at the beginning of the harvest. Occasional showers during June followed by excessive heat caused the crop to ripen prematurely. It is believed that the late freeze in April also materially affected the crop by lowering its vitality. In general the straw is below normal in height and is soft and weak, which conditions were not favorable to good grain development. Many fields were exceedingly weedy.

Winter wheat, however, is good and satisfactory yields generally will be obtained. The crop was well advanced and escaped to some extent the effects of the excessive heat which prevailed during late June.

Corn is fully two weeks early and gives promise of a big crop. The unusually warm summer has been particularly favorable to corn. It is feared, however, that the crop may be materially affected in case of drought, as root growth has been very shallow. The favorable moisture conditions which have accompanied the crop so far have not been conducive to deep rooting.

Iowa State College, Ames (Barberry Eradication, R. H. Porter) (July 15) In the original survey during June, the remaining portions of Calhoun and Woodbury counties have been completed, about half of Shelby finished, and a beginning made in Monona and Harrison counties. In these counties a total of 389 bushes was found, of which all but one were in the country and of which all were eradicated. Of the country bushes 100 were escapes. Practically all of the bushes were in Calhoun County.

In the resurvey, which covered 12 counties entirely, 1695 sprouts were located and destroyed. These were distributed rather uniformly over all the counties except Osceola which had but 2 and Lyon which had but 27. Of these sprouts 468 were found in cities and towns and 1227 in the country, of which 73 were from escaped bushes.

ILLINOIS

State Entomology Building, Urbana (Barberry Eradication, L. R. Tehon) (July 15) June! - - and Lake County! At Last, we were over on the "North Shore."

On the 15th, our working force was doubled; and the onslaught began in terrible earnest. Zion City was invaded, and Highland Park, Libertyville, Gurnee, Ravinia, Lake Forest, Waukegan, and other Lake County towns suffered the initial storm waves of publicity.

The work for the month shows a total of 4,278 miles traveled, with 10,332 bushes located on 290 properties. Of these, 46 properties, with 7,286 bushes, were "escapes." In the country district, 103 properties had 2,047 cultivated bushes; 141 city properties had 999 bushes.

The survey of the towns along the North Shore continues with a constantly increasing number of properties and bushes.

Although the actual work of locating and removing bushes did not get into full swing until late in the month, we are able to show 106 properties removing 1,117 bushes.

We are also pleased to announce that we have a 40 acre barberry plat, consisting of pasture and woodland, which will take first prize in all the barberry eradication area. Mr. Schulz, who found the plat, estimated conservatively that there were 5,000 bushes, but we believe that number could easily be multiplied by five without exaggeration.

Funk Bros. Seed Co., Bloomington (Corn root, stalk and ear rot investigations, J. R. Holbert) No report.

INDIANA

Purdue University Agricultrual Experiment Station.

Corn Root, Stalk, and Ear Rots (G. N. Hoffer) (July 14) The work in progress this summer consists of inoculation plats at Shelbyville and Battleground, Ind., breeding plats at Shelbyville, Battleground, and Wanatah, Ind., and fertilizer and limestone plats at Hope, Waldron, Greenfield, Willow Branch, Petersburg and Montgomery, Ind. Sweet corn experiments are being conducted at Lafayette and Ladoga, Ind., Degraff, Ohio, Gibson City, Ill., and Ames, Iowa. These experiments are for the purpose of breeding better resistant strains of the commercial varieties and for testing certain practices in connection with the selection and curing of the seed ears.

The inoculation plats were planted in cooperation with J. G. Dickson for the purpose of testing certain of the common pathogenes associated with the root rots. The inoculations were made at planting time by using spore suspensions.

The breeding plats are devoted to the testing of the relative resistance to root rots of the different selfed lines of Reid Yellow Dent, Johnson County White, and Early Yellow Dent strains. The leading commercial strains have been selfed and approximately 1,800 selfed lines are being studied.

The fertilizer and limestone plats are for the purpose of studying the methods of controlling the aluminum and iron injuries which affect the growth of the corn plants. Dependent upon the nature of the soils, lime has varying effects in these plats. Phosphates are proving beneficial in all of them.

The physiological experiments which are being continued are confirming the preliminary results obtained last season. The plants which become most seriously affected by the root rots are those which accumulate the largest quantities of the metallic salts and in which the metals create abnormal tissue disturbances.

The seasonal conditions have been very favorable for good growth and the breeding work began on July 9 at Lafayette. The corn at that time was 7 to 8 feet tall, an unusual growth in the experimental plats.

Everything is coming along very well and the results this season, provided the weather continues favorable, will be the best yet obtained.

Leaf Rust Investigations (H. S. Jackson and E. B. Mains) No report.

Purdue University College of Agriculture (Barberry Eradication, R. J. Hosmer). No report.

OHIO

College of Agriculture of Ohio State University, Columbus (Barberry Eradication, John W. Baringer). No report.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy). No report.

WISCONSIN

Agricultural Experiment Station, Madison

Wheat Scab investigations, (J. G. Dickson). No report

Take-all investigations, (H. H. McKinney). No report

Department of Agriculture State Capitol, Madison (Barberry Eradication, Noel F. Thompson). No report.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman). No report

College of Agriculture, University Farm, St. Paul (Barberry Eradication, Leonard W. Melander).(July 15) The month of June was one of many activities. Besides putting three more teams into the field, the State leader was busy aiding State officials in selecting their men, perfecting plans of operation, and making arrangements to get the State force in the field by July 1.

On June 29 an all-day conference was held for the new State field men. Methods of survey, the stem rust problem, the aims of the campaign, the State weed law, and other details of the work were thoroughly explained to them. Arrangements were made whereby all forces engaged in the campaign were to work in unison. The State men were willing to learn from our experiences of the past three seasons.

During the month, several good rust stations for epidemiological studies were found. These were in Goodhue, Big Stone, and Traverse counties.

The full quota of men was in the field June 16. Three more teams were placed in each of the following counties during June: Big Stone, Traverse, and Wilkin. A striking observation was made by the field men in regard to the effect of the publicity of the past winter. In the portion of the State where the men are now working, they find very few farmers who have not heard of the relation of the barberry to wheat stem rust.

St. Louis County has put a barberry scout in the field on their own funds. This scout also started July 11, and is going to do what he can, with the amount of money appropriated, in that county.

All former plantings of barberry were rechecked in Lincoln, Lyon, Yellow Medicine and Lac Qui Parle counties. The present outlook is bright for a very successful season.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger). (July 15) The first half of July was hot with enough moisture to force growth. The sorghums and broomcorn made very rapid growth and, should the season continue as it has been to date, maximum yields will be obtained.

Small plats of Feterita, Barchet kaoliang, C. I. No. 310, White milo, C. I. No. 480, Freed sorgo, C. I. No. 350, and Sudan grass were seeded today (July 15) to try their comparative value as catch crops, also to determine if they will mature grain when seeded this late.

Acme broomcorn, Dwarf milo, Sunrise kafir, and Red amber seeded April 16, and May 1, are heading rapidly. The roads have been disced and plats trimmed, and the next work is to count stands. The eleven plats of Dwarf milo of the rate and spacing experiments were counted yesterday and practically perfect stands were obtained this season.

The dairy herd has created quite a lot of new interest in this Station with the result that there are about four times as many visitors as formerly. The herd bull arrived by express from Maryland this morning.

Some wheat thrashing has been done around Woodward, the yields running about 12 bushels per acre, for the poorer fields to 19 and 20 for the better fields. Wheat seems to be thrashing out from 4 to 6 bushels per acre above estimates. Dry wheat is testing 59 and 60 lbs. per bushel.

Maximum temperature to date this month, 99° July 14, minimum 57° on July 12. Precipitation July 6, 0.63 ins. July 11, 0.28, and July 12, 0.94 ins. or a total of 1.85 inches to date.

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker). (July 12) The maximum temperature for June was 94° which occurred on the 17th and 28th. The minimum temperature was 56°, occurring on the 5th. Measurable precipitation fell on twelve days and totaled 6.26 inches. The mean maximum temperature was 85.6° and the mean minimum temperature 65.3°.

Thrashing of the small grain nursery was completed on July 8 and the grain is now being cleaned and notes taken on plumpness, hardness, and amount of yellowberry.

Thrashing of the experimental plats at the agronomy farm was completed July 13 and thrashing of the commercial fields of Kanred wheat and Kansas Fulghum oats will be completed this week. A 40 acre field of Kanred wheat yielded at the rate of 31 bushels to the acre and a 5 acre field of Kansas Fulghum oats at the rate of 42 bushels to the acre.

Mr. Parker visited the Colby, Kans., and Akron, Colo., Field stations in company with Mr. John H. Martin, returning to Manhattan on July 8th.

California Mariout barley appears to be too short to be of practical value under Kansas conditions if its behavior this year is typical. C. I. Mariout barley, however, seems to be more promising and is earlier and apparently will make a good yield.

Hays Branch Station, Hays (A. F. Swanson) (July 15) One of the heaviest rains (3.7 inches) fell on July 4. This rain delayed harvest to some extent but was beneficial to all row crops.

The harvest on the Cereal Project was completed on the forenoon July 4. All of the experimental thrashing will be completed by tomorrow evening. Yields of wheat are running from 25 to 35 bushels. The yields of the different varieties will be given at a later date.

All of the row crops on the Cereal Project have been laid by and are making good growth. Some of the earlier sorghums as Freed Sorgo and Early Buff Durra are just beginning to head.

Harvest throughout the country is completed and a number of thrashing machines are now at work. The weather is ideal for thrashing.

COLORADO

Agricultural College, Fort Collins (Barberry Eradication, John R. Fitzsimmons). No report.

Akron Experiment Farm, Akron (F. A. Coffman). No report.

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel) (July 15) During the month of June, 1039 barberry bushes were found on 40 properties in parts of Douglas, Sarpy, and Cass counties. The barberry bushes were removed from 29 properties. The bushes found and not removed during the month occurred in large hedges. Effort is being made to have these removed at once. On resurvey work in cities of these counties, 89 barberry sprouts were removed.

Rust infection on barberries in this section is very light. The spread of rust from barberries to cereals in this area was very difficult to determine. Most of the barberries found were near Omaha, and very few grains are raised in that vicinity. The grain fields were usually some distance from the bushes. Consequently it was hard to tell whether the rust which did occur on grains came from the barberries or from some other source.

Stem rust was very general throughout the state on winter wheat, oats, barley, and rye. The winter wheat was too far advanced to become damaged by the rust. The infection on oats was quite heavy. On barley the infection also was heavy and there was undoubtedly a reduction in yield due to the heavy infection. Stem rust on rye was very light.

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, Ralph U. Cotter). (July 11) I go from here to Lusk, Niobrara County, to finish up the work in that county, which will probably take about three days. From Lusk, I go to Newcastle, Weston County, for about three to five days. From Newcastle I go to Sundance, Crook County, for about two weeks. By that time I shall have heard from you as the time you expect to be in this state. I go either to Johnson or Sheridan County from Crook County.

Cheyenne Experiment Farm, Archer, (A. L. Nelson) (July 5) The month of June was unusually favorable for crop production. The precipitation was 2.83 inches, most of which fell during the first half of the month. The last half of the month was quite warm and dry, causing some of the crops to burn, but rains which occurred the last of June checked this condition. To date (July 5) we have had 0.65 inch, which will greatly benefit the winter wheat. The early varieties of spring wheat, oats and barley are in head. Practically all plats ... have been trimmed and preparations are under way for the annual Farmers' Picnic Day which is to be held July 12.

(July 16) The past 15 days have been favorable for crops. The 1.03 inches of precipitation which came during the first week were very timely. At present the crops are in need of rain. The weather has been quite warm and dry, thus preventing rust. Fields of oats near Cheyenne have been practically ruined by this disease. Winter wheat is turning yellow and the harvesting of this crop will soon be under way. Spring wheat, oats and barley are in head. The straw will be rather shorter than usual unless moisture is had in the near future.

The Laramie County Farm Bureau held its annual picnic at the station on July 12. There were between 1500 and 2000 people present. The day was declared a success by all.

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, H. C. Gilbert) (July 15) The original farm-to-farm survey of Hamlin County and the eastern six-tenths of Kingsbury County was completed during June. Bushes to the number of 1891 were found, of which 1415 were escaped. The number removed was 1189.

Four counties were covered in the resurvey. In Brule and Charles Mix Counties only 5 bushes were found in each. In Lincoln County 726 bushes were found and all removed. In Minnehaha County 243 bushes were found and 193 removed. In Charles Mix County, 4 bushes were sprouts, in Lincoln 70 bushes, and in Minnehaha County 151 bushes were sprouts.

The counties scheduled for survey in July are Union, Clay, and Yankton all bordered by the Missouri River in the extreme southeast corner of the State .

Highmore Substation, Highmore (A. C. Dillman)(July 1) I finished my work at Newell sooner than I had planned, and came to Highmore last night. The crops here are very poor, and if the temperature of today continues very long there will be practically no small grains. The temperature is over 100° F now and a 30 mile wind is blowing. Therrainfall in inches here during the year so far is as follows: Jan. 0.25, Feb. T, Mar. 0.49, Apr. 1.78, May 2.60, June 0.55.

The extreme drought during June is what has caused the damage. The small grain crops in the vicinity of Redfield and Aberdeen were almost entirely destroyed by drought when I came through there a week ago. You could see a jackrabbit in a wheat field for 80 rods.

At Newell the dry land crops look fairly good. On June 27 there was a rain of 1.64 inches, and this ought to insure a fair crop under the best conditions.

There is not a plat of flax on the farm at Brookings, I understand, and I think I shall go down to Watertown tomorrow instead. I will return to Mandan July 6.

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel) No report.

State College of Agriculture, Agricultural College (Barberry Eradication, George C. Mayoue). No report.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.)(July 2) The last half of June has been extremely hot and dry. Precipitation recorded during this period was only 0.10 inch and the total precipitation for the month of June was only 0.82 inch. After about a week of continuous hot, dry weather a temperature of 108° was recorded July 1. This is the highest temperature ever recorded here or at Bismarck since records were taken. An average wind velocity of 8.7 miles was recorded for the same 24 hour period. In the afternoon of June 30 the high temperature and hot wind were so oppressive that it was considered dangerous, and very little work was done in the field.

The wheat varieties which were sown on disked corn ground might still yield some seed if we get a good rain soon.

Of the oat varieties Sixty-Day is fully headed and ripening and may produce some seed. All other oat varieties burned almost crisp when partly headed and will probably be total failures.

All barley varieties still have a chance of yielding some seed if we get sufficient rain soon.

The combination of drouth and heat will about finish all flax except that grown in cultivated nursery rows. The wilt-resistant varieties from Minnesota Nos. 51-1 and 75-1, though early enough to set many bolls before the extremely hot weather, were the first to turn brown from the drouth.

The fall-plowed plots in the B. L. A. rotations following a small grain will probably be total failures. Yields of all plats will be very low unless we have a good rain soon.

Mr. A. C. Dillman left June 25 for a trip into South Dakota, and is not expected back for over a week.

Mr. W. E. Brentzel arrived June 27 to attend to his flax disease plantings.

Miss W. Weniger visited the station June 28. She found a few pustules of stem rust on some of the wheat varieties. Even now, however, only traces of stem rust can be found after a very careful search.

R. W. Smith, in charge of cereal experiments at the Dickinson substation visited the station June 29.

Maximum temperature for the last half of June was 108°, recorded July 1; minimum 55°, recorded June 20 and 22.

(July 16) The first half of July has been extremely hot and dry. The record temperature for the past forty years of 108° on the last day of June was again broken by a temperature of 110° recorded July 10.

Most of the flax and cereals in the rotations and varietal plats are complete failures as a result of the extreme heat and drowth.

Sixty-Day Oats and White Smyrna barley were harvested with a binder July 14. All other oat varieties dried up before heading and were mowed July 15. Hannchen and Svanhals barley also dried up before heading and were mowed. Mariout, Coast and Manchuria produced some seed, probably on account of poor stands. These were harvested with a binder today. The wheat varietal plats, which were sown on disced corn ground, have headed very well and are ripening rapidly. Hard Federation, Ruby and Red Bobs were harvested today. There is practically no stem rust in evidence. Flax in the rotation plats has already been mowed as a complete failure and there is practically no hope of harvesting any seed from the flax varietal plats. Even the flax nurseries where the rows are a foot apart and which were kept free from weeds have stopped blooming so early that we shall hardly get the seed back.

Mr. A. C. Dillman returned from his South Dakota trip July 6. Mr. T. R. Stanton arrived here today.

Maximum temperature for the first half of July was 110 recorded July 10; minimum, 52, recorded July 4 and 6. Precipitation .60.

Dickinson Substation, Dickinson (Ralph W. Smith) (July 5) The month of June was unusually hot, causing rapid growth of all crops, especially corn. During the first half of the month crops suffered quite severely from lack of rain, as there were only a few light showers from May 20 to June 15. During the latter half of the month about 3 inches of rain fell, making a total of 3.09 inches for the month.

As a result of the early drought grains headed prematurely and the straw will be short. The crops will in most cases be rather light. Most of the wheat varieties are almost fully headed and the winter rye is nearly ripe. Flax varieties are beginning to blossom.

There is considerable leaf rust in the winter wheat and in the varieties of common spring wheat. There is only a trace of stem rust.

In a recent trip to Mandan it was observed that cereal crops are fairly good for a distance of about 50 miles east from Dickinson. From Glen Ullin to Mandan, a distance of about 60 miles, crops are very light except where affected by local showers and in many fields there will be crop failures due to drought and hot winds.

The Substation was visited on June 30 by Mr. Olsen of the Office of Farm Management.

(July 18) The weather has continued hot and somewhat dry during the first half of July. So far there have been two rains of about a half inch this month.

As a result of the heat and continued sunshine, crops have made rapid growth and maturity. Winter rye varieties were harvested July 9, and early varieties of oats and barley, also Hard Federation and Ruby wheat were harvested July 16. The straw is short this year and much of the Marquis wheat in this section will have to be headed as it is too short for binding conveniently. The general harvest in this locality will begin in about a week. Crops will be rather light due to the heat and dry weather. Corn is in good condition and promisis to be the best crop.

Mr. A. C. Dillman and Mr. T. R. Stanton are at the Substation today.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May). (July 12) The precipitation for the first 12 days of July has been 3.28 inches. Two rains that measured slightly over an inch have fallen since the first of the month. These fell on the second and third and measured 1.09 and 1.15 inches respectively. Rain and hail fell on the tenth that amounted to .79 inch. The hail damaged our winter wheat and early oats in spots to a small extent. A few neighboring farmers report that their wheat was damaged from 20 to 30 per cent by the hail. However, the greatest damage on the station farm would not exceed 5 or 10 per cent.

The maximum temperature so far this month was 87° on the ninth and the minimum temperature 39° on the third.

We have been having ideal weather for wheat and our prospects at present for a large crop are unusually good. This is especially true of winter wheat that did not winterkill severely. However, the crops are not sufficiently developed that drouth may not yet severely cut the yields.

We began putting up alfalfa the middle of last week but recent rains are delaying us. Several acres of alfalfa in the shock was damaged by the rain which fell on July 10.

Director Linfield of the Montana Experiment Station and Mrs. Linfield visited the station on July 5 and 6.

State College of Agriculture, Bozeman (Barberry Eradication, H. E. Morris) No report.

WESTERN BASIN AND COAST AREAS
(North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (L. C. Archer). No report

OREGON

Sherman County Branch Station, Moro (D. E. Stephens). No report.

CALIFORNIA

Rice Field Station, Biggs (J. W. Jones). No report.

Plant Introduction Station, Chico (V. H. Florell). No report.

Agricultural Experiment Station, Davis (F. N. Briggs) On July 2 and 3 a gale swept the Sacramento Valley, causing considerable loss of grain from shattering and increasing the damage from grain fires very materially. There were three fires in the vicinity of Davis which destroyed some 25,000 acres of grain, mostly barley, and 10 farm homes.

Some varieties of wheat in the smut nursery were badly shattered but accurate smut counts can still be obtained. Some of the latest winter wheats will probably not mature so that smut counts can be made on them.

Prof. W. W. Mackie is taking data on the rust nursery where he has a good epidemic of stem rust.

Mr. J. Allen Clark was a station visitor Thursday, June 23.

Temperatures of 100° and over have been recorded frequently during the last three weeks.

Agricultural Experiment Station, Berkeley (W. W. Mackie). No report

CEREAL COURIER

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 July 30, 1921 No. 18

Personnel(July 21-30) and Project issue.

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PERSONNEL ITEMS

L. W. Boyle began July 18 to collect smut spores from the three separators equipped with smut fans in the Walla Walla district of Washington.

Merle T. Jenkins left Bloomington, Ill., July 23, for Burdette, Ark., to assist Mr. F. D. Richey in taking notes on corn experiments there and in hand pollination of corn. Mr. Jenkins will remain at Burdette until about August 5.

Dr. A. G. Johnson arrived in Washington July 28, where he will remain for a month or more to supervise cereal disease investigations during the absence of Dr. H. B. Humphrey.

Dr. F. E. Kempton returned to Washington July 29 from an inspection of the field work in barberry eradication and attendance at the cereal conference at St. Paul, Minn., and Fargo, N. D.

C. H. Kyle returned to Washington July 25 from Florence, S. C. where he has been engaged in hand pollinating corn in his experimental plats there during the past several weeks.

Dr. C. E. Leighty returned to Washington July 29 from a 10-day trip to Ithaca, N. Y., and other points in the western part of that State in connection with cooperative experiments with wheat and rye.

Courland D. Little returned to Washington July 26 from a month's leave in Oklahoma. Mr. Little has accepted a position with a law firm in Tulsa, Okla., and resigned his position as chief clerk of the Office of Cereal Investigations, effective July 31.

John H. Martin writes from Fargo, N. Dak., under date of July 21, that he is going from there to Manhattan, Kans., and will be at the Kansas Agricultural Experiment Station for a month or more in connection with cooperative wheat investigations.

Merritt N. Pope returned to Washington July 28 from St. Paul, Minn., where he has been engaged in cooperative experiments with barley at the Minnesota Agricultural Experiment Station during the past five weeks.

Fred D. Richey returned to Washington July 30 from a three weeks trip to Bloomington and Champaign, Ill., and Burdette, Ark. He studied corn experiments at Champaign and Bloomington, and from July 16 to 28 he hand pollinated corn and took notes on corn experiments at Burdette. He reports prospects for an excellent corn crop at Burdette, and throughout Mississippi County, Ark.

C. W. Warburton returned to Washington July 23 from a week's trip to Ithaca and points in Jefferson and Lewis counties, N. Y., to inspect cooperative oat experiments. The Cornell University Agricultural Experiment Station has numerous cooperative experiments with farmers in the extensive oat-growing district in northern New York and several of these experiments were visited. The new varieties recently named by the Cornell station, the Cornellian, Comewell, Standwell, and Empire, are showing up well in these experiments, especially the Cornellian.

Dr. W. H. Weston, Jr., returned to Washington July 27 from attendance at the cereal disease conference at St. Paul, Minn., and Fargo, N. Dak.

PROJECT REPORTS

CEREAL DISEASE INVESTIGATIONS

(Dr. H. B. Humphrey, Pathologist in Charge).

218 A. IMPERFECT AND SAC FUNGI

(Dr. A. G. Johnson, Pathologist in Charge).

Investigations of Cereal Nematodes.

The nematode disease field experiments conducted at Arlington Farm were completed by Mr. Leukel June 27. The results obtained from the past year's investigation were altogether satisfactory and conclusive. We now have important data showing the effect of the disease on the stand and yield of wheat and rye and methods of control. The past season's experiments at Arlington Farm have also given us added and confirmatory information regarding varietal resistance and the relation of birds to the distribution of the nematode. Feeding experiments conducted in cooperation with the Bureau of Biological Survey proved conclusively that birds such as the English sparrow are able to digest the eggs and larvae of the nematode. Experiments of this same type are being conducted by Mr. Leukel at Madison, Wis., where he is feeding nematode galls to different kinds of domesticated animals.

218 B. RUST INVESTIGATIONS.

(Dr. H. B. Humphrey, Pathologist in Charge).

Crown Rust Investigations

Miss Florence Willey, who spent the latter part of June and early July in Colorado collecting material for use in her studies of crown rust of oats in cooperation with the Iowa stations, writes as follows under date of July 11, from Ames, Iowa:

The trip from Denver to Lake Eldora to collect the aecidia on Lepargyraea was made by automobile as was also the trip from Denver to Pagosa Springs. Mr. Clokey, one of the curators of the Colorado State Historical and Natural History Society, accompanied us on the trips in his automobile, since he also was collecting. The expense was no greater than it would have been to go by rail. This enabled me to collect along the way and get an idea from the field that I could not have gained in any other way. Both Mr. Bethel and Mr. Clokey were very fine to me, and made the trip pleasant as well as enabling me to study the desired material.

In the Lake Eldora country, Lepargyraea grows abundantly, as well as a number of grasses. The Lepargyraea was very heavily infected with aecidia. This is a crown rust, but since no oats or Rhamnus grows in that vicinity, it is not known whether or not that is an alternate host. Around Pagosa Springs, Rhamnus smithii covers the hillsides, and there, this host is equally heavily infected with aecidia, as well as having some of the same grass hosts as are found at Eldora. However, no Lepargyraea is found in the vicinity of Pagosa. We found but one oat field near Pagosa Springs, but it was too early to find crown rust infection. Mr. Bethel is inclined to think that the crown rust of Lepargyraea is not connected with the rust on Rhamnus, altho the number of Rhamnus hosts which he has exposed to infection has been limited. He has done no work with the rust on Rh. smithii. Apparently, the teleutospore hosts are chiefly Bromus, Agropyron, and Koeleria. I am inclined to think there may be others, but at this time of the year it is difficult to get material with teleutospores which have not germinated. I am anxious that we get this material in the fall so as to try it on all our Rhamnus here next spring.

218 D. SMUT INVESTIGATIONS

(Dr. W. H. Tisdale, Pathologist in Charge).

Smut Investigations on Arlington Farm

The following is a summary of the progress of the cereal smut work on Arlington Farm this year:

Loose smut of wheat: Records have been made on the various loose smut plats of wheat for this season. Good results have been obtained through a number of methods of treatment by way of controlling the loose smut of wheat. Hot vapor, and a number of simplified single-bath hot water treatments, have been successfully employed in controlling both the loose smuts of wheat and barley. Some of the wheat plats sown with seed treated by the simplified method outyielded the check plats and also outyielded plats which were treated by the hot water method now in common use.

The first results have been obtained in the varietal tests of wheats for their resistance or susceptibility to loose smut. The percentages of smut vary considerably with different varieties. A large number of varieties were carefully inoculated this season for further tests on a much larger scale than was employed this year. The seed of these inoculated heads developed in good shape and have already been harvested.

Wheat bunt: The record taking is still in progress on the plats where about 300 varieties of wheat are being tested for their behavior toward bunt attack. This work will soon be completed and a summary will be available. The wheat came through the winter in fairly good shape and the results look rather promising.

Smuts of oats: The 58 varieties of spring oats which were sown for testing their resistance to both loose and covered smuts did well for spring oats in this locality. Some varieties are showing high resistance to the smuts while others are very susceptible, as has been previously noticed. The recording of the data has just begun on these plats and will not be completed for some time.

Covered smut of Barley: The note work has been completed on the varietal tests of barleys for their resistance to the covered smut. However, these results have not been summarized as yet.

Seed treatments: The various seed treatments for the smuts of barley and oats show indications of promising results in some cases. The plats have been harvested but the note work is not yet completed. A few new preparations put out by individuals and commercial concerns have been tested and some of them are rather promising.

Corn smut: In previous years Mr. Kyle has noted considerable difference in the amount of smut developing on some of his selfed strains of corn. Forty-one of his representative selfed strains were planted this season for a study of their behavior to smut. These plants have just been inoculated with a water suspension of conidia of *Ustilago zeae* which was obtained by growing the organism in pure culture. These plants will be inoculated again before the season is over.

CEREAL COURIER

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 August 10, 1921 No. 19
Personnel (August 1-10) and Field Station (July 16-31) issue.

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PERSONNEL ITEMS

Ralph W. Adamson has been appointed field assistant, effective July 27, in connection with the barberry eradication campaign in Iowa.

The appointment of Dixon L. Bailey, who has been under appointment as agent in connection with the stem rust investigations in cooperation with the Minnesota Agricultural Experiment Station, was terminated May 31.

J. Allen Clark returned to Washington August 8 from a two months' trip to California, Oregon, North Dakota, Minnesota, and other States, in connection with western wheat investigations.

Dr. Charles Drechsler, formerly engaged in investigations of helminthosporium diseases of barley, and now with the Office of Cotton, Truck, and Forage Crop Disease Investigations, arrived in Washington August 1, to complete his investigations of helminthosporium species and prepare the data for publication.

Miss Charlotte Elliott, who has been engaged in the investigations of bacterial diseases of oats and millet in the Laboratory of Plant Pathology under the direction of Dr. Erwin S. Smith, was transferred to the Office of Cereal Investigations on August 1.

Dr. Harry V. Harlan returned to Washington August 5, from a trip to the Western United States in the interests of barley investigations, particularly with reference to studies of the development of the barley kernel at Aberdeen, Idaho. He reports especially favorable conditions at Aberdeen this year, and states that yields of all crops will be above the average.

Morris J. Lapidus, who was appointed agent in connection with stem rust investigations at the Minnesota station, effective July 26, did not report for duty, and his appointment has been revoked.

Claude Leist has been appointed field assistant in the barberry eradication campaign in Illinois, effective July 26.

George W. Martin of Monmouth, Ill., has been appointed field assistant for service in connection with the barberry eradication campaign in Illinois, effective July 27.

Miss Virginia Sargent, who has been engaged as typist in Cereal Disease Investigations for the past two years, has been appointed clerk, Class 1, having passed the stenographer-typewriter examination.

Prof. E. G. Schafer, who was appointed agent in connection with cooperative investigations of cereal smuts during the absence of Prof. E. F. Gaines from the Washington Agricultural Experiment Station, has resigned, effective June 30, Professor Gaines having completed his duty for a doctor's degree and returned to Pullman.

Hugh S. Smith, who has been in charge of the accounts section of the Office of Cereal Investigations during the past two years, has been made Head Clerk, succeeding C. D. Little, whose resignation was previously noted.

Hugo Stoneberg arrived in Washington August 6 from the Pee Dee Experiment Station, Florence, S. C., and will assist Mr. Kyle in his corn experiments on Arlington Farm.

Victor F. Tapke left Washington August 6 for Madison Co., Ill., where he will supervise the treatment of wheat for the eradication of flag smut.

VISITORS

H. R. Cates, formerly of the Office of Forage Crop Investigations, now engaged in the crop insurance business with headquarters at Atlanta, Ga., was an office caller August 6.

MANUSCRIPTS AND PUBLICATIONS

A manuscript entitled "Production and Dispersal of Conidia in the Philippine Sclerosporas of Maize," by Dr. W. H. Weston, jr., was transmitted August 3 for publication in the Journal of Agricultural Research. This is the third of the series of papers prepared by Dr. Weston in connection with his investigations of downy mildews of maize in the Philippines.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens, and Substations (R. R. Childs). No report.

SOUTH CAROLINA

Pee Dee Substation, Florence (Hugo Stoneberg). The weather the latter half of July continued cloudy, with considerable rain. There were very few bright and hot days. All crops made rapid growth. Prospects are good for a bumper corn crop which is practically made at this time.

The hand pollinating continued in the corn breeding plats and about 5,000 selfs have been made.

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor). The oat yields at Arlington Farm for the season 1920-1921 are as follows:

Variety	C. I. No.	Bu. per acre
Winter Turf	541-4	98.7
Do	435-4	87.0
Do	431	73.5
Do	274-20	62.8
Culberson	273	67.3
Do	273-1-10	66.1
Do	273-1-14	58.1
Dwarf Culberson	748	45.2
Bicknell	206-151	64.2
Do	206-155	70.5
Red Rustproof	518-3	55.3
Do	1815	31.0
Black	838	59.1
Fulghum	708	43.4
Aurora	831	67.6

The yield in bushels per acre represents the average of three fortieth-acre plats, with the exception of Culberson, C.I.No. 273, which was used as a check and was grown on 12 fortieth-acre plats.

These oats were seeded September 29 and October 4, 1920.

NEW YORK

Cornell University Experiment Station, Ithaca (F. H. Love). (August 3) The harvesting of small grains both at the station and at the several outlying plats has been completed and thrashing is now under way. The wheat from the rod-row series is practically thrashed, as well as that of the drilled plats. The data have not yet been assembled so the results cannot be given at this time.

During the past two weeks some very interesting field meetings have been held in connection with the various small grain crops. In Chemung County a very enthusiastic group of oat growers gathered to look over the demonstration and while there a number of them agreed to take quantities of seed of the new introduction. Several fields of the Cornellian oat have been inspected this year and they look very well. It seems that in certain sections of the State at least this oat will be very much in demand.

The thrashing of individual plants from our hybrids is now being done preparatory to sowing these this fall for comparison with our other strains of wheat. Reports of wheat yields in the State indicate a rather low average yield. In some cases, owing to dry weather, wheat has not filled out well, so that there is considerable shriveled grain.

A large series of oat hybrids has been harvested, many of these including crosses between Cornellian and some of our white strains of oats. These have been made for the purpose of obtaining, if possible, a white oat that yields as well as does the Cornellian.

A study of the inheritance of smut with oat hybrids has shown some very interesting results and this study will be conducted on a larger scale another year.

Rhinebeck (Corn Investigations, L. S. Mayer). (August 1) The last two weeks of July have been very favorable for all crop growth, with occasional heavy rains followed by days of fair, warm weather. A severe and wide-spread storm on the last day of the month has done considerable property and crop damage. Fruit trees especially have suffered much.

Wheat and rye harvesting is nearly completed and the oat harvest is generally under way. Corn continues to make rapid growth. The lodged corn of the early planted experimental fields has straightened considerably, but is badly tangled and will be difficult to harvest. Detasseling of the breeding rows has been completed. Silage corn will have to be cut by hand as its tangled condition precludes the use of machinery. Pastures have improved immensely since the rains.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Crowley Rice Station, Crowley (J. Mitchell Jenkins). (July 25) The station plats are very attractive, except the irrigation plats, which are again infested, to a greater or less degree, with sedge. The non-irrigated rices look exceptionally well, and if showers continue during August as they have this month, the yields should be good, as these rices are likely to head during next month. We have been having rain for about a week, not very heavy, but enough to prevent cultivation of dry-land crops.

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler). (July 29) The past two weeks have been very hot and dry, with most unfavorable effects on the corn crop, which has suffered almost all over the State from lack of moisture. In the last two days, however, we have had two good showers, probably totaling over an inch at this point, though I have not yet been able to learn how general these rains were. They have benefited our corn in this section very materially.

For the last three weeks we have been working steadily on our corn breeding experiments and this work will continue for another week or two. We are selfing about 300 strains of corn, many of them commercial and native varieties from the South and Southwest and many of them inbred strains now in the second or third generation. We are studying the inheritance and linkage relations of about 40 characters in corn. We are also obtaining data on several incidental genetic problems.

In our varietal experiments with wheat in drill-width plats the leading variety was Fulcaster, followed by several improved strains of Michigan Wonder. These varieties have been the leaders in central Missouri in the average of all of our tests of past years.

IOWA

Iowa State College, Ames (Barberry Eradication, R. H. Porter). No report.

Agricultural Experiment Station, Ames (L. C. Burnett). (July 29) Thrashing has now been in progress the better part of two weeks. The nursery is

entirely thrashed, as have all the plats except the varietal plats. The weather is very hot and dry, as it was during the early part of July.

The yields of Iowar and Iogren oats are considerably better than the average varieties but the quality is not all that we might expect. Most of our Iowar oats yielded as much as 50 bushels per acre. The Iogren oats on the Station yielded 40 and 37.13 bushels per acre on two different fields. Winter wheat yields on low land have been quite poor. The yields on higher land that had better tillage last year ran as high as 33 bushels per acre.

ILLINOIS

State Entomology Building, Urbana (Barberry Eradication, L. R. Tehon). No report.

INDIANA

Purdue University Agricultural Experiment Station.

(Corn Root, Stalk, and Ear Rots, G. N. Horner). No report.

(Leaf Rust Investigations, H. S. Jackson and E. B. Mains). No report.

Purdue University College of Agriculture (Barberry Eradication, R. J. Hosmer). (July 30) By the end of July the survey of all counties in the extreme northeastern part of the State has been completed, thus rounding out a block of territory made up of northeastern Indiana, southern Michigan, and northwestern Ohio. All of DeKalb and Steuben counties and the balance of LaGrange county were covered during this month. During this period some of the most striking cases of the spread of rust from the barberry which have been observed since the campaign began in Indiana were discovered. In one instance a single bush in the front yard of a farm in DeKalb county was found to have spread rust to about 25 acres of wheat within a radius of a mile. One of these pieces of wheat, consisting of about 15 acres on the farm of the man owning the barberry bush, was being thrashed on the day the bush was discovered. No further argument was necessary to convince these men that were thrashing this rusted grain that the barberry should be removed.

We are making it our policy to dig out all bushes found where the owners are present to give their consent. We feel that, although these bushes would undoubtedly be removed soon, they would not be removed as thoroughly, because the owner ordinarily does not realize how easily the common barberry sprouts from the stray roots.

OHIO

College of Agriculture of Ohio State University, Columbus (Barberry Eradication, John W. Baringer). (June 30) During the first half of June the Ohio barberry eradication forces attempted to make a clean sweep of the remaining common barberries in Montgomery county. Our efforts were partially successful. After repeated verbal explanations, entreaties, and warnings had been given to Dayton barberry owners by Federal field assistants, it was necessary for the Ohio State Department of Agriculture to serve more than 100 legal notices. Many property owners are complying with the terms of the written notice prior to the date of expiration as set forth therein. Affidavits are filed by the Ohio State Department of Agriculture, with the County Prosecuting Attorney, against all who finally fail to comply with the written legal State notice. Provision is made for the assessment of a $100 maximum fine against the defendant.

The task of eradicating the common barberry from Dayton is tremendous but not an impossible one. More plantings of rust susceptible barberries have been located in Montgomery County, Ohio, than had been reported found prior to January 1, 1921, in the States of Montana, North Dakota, and Wyoming combined. Many of the Dayton plantings consisted of only one to five bushes but it is often as difficult to persuade some property owners to remove a single straggly barberry as it is to induce others to destroy a large hedge.

In June it was not at all difficult to find a large sprinkling of black stem rust in almost any wheat field of central and western Ohio. However, it was not generally present to a damaging degree. A very few instances of serious damage from black stem rust have been reported. All reports of serious damage from stem rust, which have been investigated to date, have shown that escaped common barberries were responsible for the attacks. It is hard to account for the general light sprinkling of black stem rust over extensive areas.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy). (June 30) Farm-to-farm survey work has been completed in St. Joseph county and the field assistants are now located in Cass county, two townships of which have been surveyed.

St. Joseph county was one of the first sections of Michigan to be settled and from the number and wide distribution of harmful barberry bushes it is evident that these early settlers had keen admiration for the shrub. Forty-nine rural plantings were found and these plantings were sufficiently scattered so that no grain field was greatly removed from a source of infection. The average number of bushes to each location was over 106, which indicates that seeds had been scattered from the parent bushes and emphasizes the fact that, if removals are delayed, the menace from barberry is making rapid progress each year.

From the observation of infected barberry leaves it is apparent that the bushes suffered three distinct periods of infection. From the appearance of the cluster-cup scars it would seem that these periods were separated by about two weeks. Heavy infection was found upon oats, wheat, barley, and rye. Three large bundles of infected wheat have been collected for this office. Dr. Besse and Dr. Coons declare that this wheat represents the most severe attack of black stem rust which has come under their observation.

Mr. Henry, who is studying rust epidemiology under the direction of Dr. Stakman, visited sections of St. Joseph county, and we hope that the plats of infected areas which he secured will be excellent publicity material for our State.

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson). No report.

Department of Agriculture, State Capitol, Madison (Barberry Eradication, Noel F. Thompson). No report.

MINNESOTA

College of Agriculture, University Farm, St. Paul (Barberry Eradication, Leonard W. Melander). (July 30) The barberry survey work during the month of July progressed very rapidly, as the weather and roads were exceedingly favorable. Our forces, augmented by 14 teams of State men, succeeded in completing 7 counties and found 1,783 bushes on 79 properties.

If the work continues as rapidly in August as it did in July, there will be a total of about 37 counties completed in this State by the end of this month. To date, 23 counties have been completed in Minnesota. However, the territory now being surveyed is very easy to work. When we reach southeastern Minnesota, there will be considerable difficulty encountered in surveying that part of the State, due to the rough terrain.

One of the worst counties surveyed during the past month was Renville county. The men resurveyed the previous findings in that county along with their systematic farm-to-farm survey. Here it was again proved that resurvey is absolutely necessary. On several properties, hundreds of small seedlings and sprouts were found, regardless of the fact that these places had been thoroughly gone over for bushes in the summer of 1919 and the spring of 1920.

During the month, a circular letter was sent to all county agents, inquiring about fair demonstrations. Indications are that we will have barberry on display at many of the county fairs the latter part of this month and next month. Preparations are also being made for a State Fair demonstration. Adequate space has already been obtained.

Judging from the way the survey is progressing now, there is no question that this will be one of the most successful years since the beginning of the campaign.

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman). No report.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger). (July 30) A brief trip was made to Lawton, Okla., July 25 to 27, to inspect the broomcorn varietal plats before they were harvested. Several varieties of broomcorn have been grown at the Lawton Field Station since 1919, and the yields for 1919 and 1920 were rather above average. There are a number of nice plats of kafir in the varietal experiment at Lawton. Blackhull kafir, C.I.No. 71, seems to be their best variety again this year, though a new strain known in western Oklahoma as Bishop's kafir, and which I am growing as C.I.No. 628, is going to give a high yield.

From Woodward to Elk City, Okla., the crops are wheat and corn. Most of the wheat is thrashed. Corn is green and should make a good crop. Pastures are in good shape, and most farms have a small patch of sowed feed, but there is not as much kafir or milo as there should be. From Elk City to Mangum the crops were wheat, corn, and kafir in about equal acreages, with some cotton. Wheat was being thrashed in this section, most of it being bound. From Mangum to Altus cotton was the main crop, with quite an acreage of dwarf milo and some kafir, feterita, and corn. From Altus to Frederick the crops were cotton and wheat, with some milo. The southern end of the trip was through rather dry territory and rain is needed badly.

(August 2) The last half of July was hot and dry, and on several days there was a rather warm wind blowing. Nothing has been injured by the hot, dry weather to date but a rain will be welcome whenever it comes.

The broomcorn plat seeded on April 18 was harvested July 28. The brush was uniformly long and heavy, and the plat was very uniform as to maturing, all the brush being obtained at one pulling. The second date plat of broomcorn, seeded April 30, is ready to harvest now, but it is not as uniform as the first plat. All of the sorghums seeded in May are heading and filling rapidly. A good rain is all that is needed now for heavy yields of sorghums.

The stands of all experiments except the later dates have been counted, and the work for this week will consist of topping, bagging heads for seed, and hoeing weeds from some of the plats.

Thrashing in Woodward county is quite well advanced; another week should see the last of it for this year.

Maximum temperature for the last half of July was 101° on the 18th; minimum, 64° on July 21. The precipitation for the last half of the month was 0.65 inch in two showers, making a total of 2.50 inches of rainfall for July against a 13-year average of 2.43 inches.

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker). (August 5) Nursery yields of winter wheat varieties at Manhattan, Kans., in 1921 are as follows:

Kansas No.	C. I. No.	Name	Bu. per acre
2414	5880	P 1068	31.07
2415	5879	P 1066	29.03
343	6251	Blackhull	27.97
2401	5146	Kanred	24.50
2472	5549	Kharkof (Montana No. 36)	21.83
321	6249	Nebraska No. 6	21.63
55	-	*Fulcaster	21.43
326	6156	Bacska	21.40
350	6467	Station Red	20.77
2464	6155	Minturki	19.07
385	1438	Alton (Ghirka Winter)	18.87
382	6206	Kharkof	18.43
347	6676	Iowa No. 1946	16.57
2250	1583-30	Kharkof (Mont. sel.)	16.57
322	6250	Nebraska No. 60	15.77
2156	6215	*Fultz	15.17
19	6199	*Harvest Queen	14.97
2450	5194	*Minhardi	14.43
2195	5170	Eureka	14.07
570	1558	Turkey	13.67
2048	5797	Alberta Red	10.87
34	5147	*Nebraska No. 28	9.57
2084	6211	*Zimmerman	9.30
2331	3330	*Buffum No. 17	6.37
310	-	*Red Rock	5.43
2465	6151	*Quassa	4.93

*Soft wheats.

This list includes only a few of the better known varieties. It will be noted that the three rust resistant varieties, P 1066, P 1068, and Kanred, outyielded the other varieties, with the exception of Clark Blackhull, which again made a high yield. Of the winter hardy varieties, Minturki made a much better yield than Minhardi, and both these varieties made much higher yields than either Buffum or Odessa, which are later in maturing.

The soft wheats as a group made low yields this year, due in part to injury from spring freezes.

The yields of the winter wheat varieties grown by Professor Salmon in plats at the Agronomy Farm will be reported later.

Kanred wheat made a splendid showing on farms in Kansas this year. More favorable reports are being received than in any previous season.

The Kansas Crop Improvement Association issued a list of growers having inspected seed of Kanota (Kansas Fulghum) oats, and Kanred, Fulcaster, and Blackhull wheat. Copies may be obtained by writing to the Secretary at Manhattan.

The weather during the first week in July was warm and clear and favorable for crop growth. During the second week, warm, clear weather continued with sufficient moisture for crop growth in most sections of the State. During the third week rains were very general throughout the State which were a great benefit to corn and pastures and put wheat land in good condition for plowing. Local rains fell during the fourth week, but in some localities, especially in the central counties, corn was severely injured by hot weather and lack of moisture. At Manhattan the maximum temperature for the month was 98° on the 13th and 27th and the minimum was 62° on the 21st. Measurable precipitation fell on six days during the month, totaling 4.21 inches.

Mr. Carl Bower has completed the bagging of a large number of ears of corn in the corn disease plats and is now engaged in taking smut notes on the varieties and selections. Sorghums are heading and notes are being secured on the Red Amber X Feterita hybrids.

A large straw stack and one of the hay barns containing a considerable quantity of baled alfalfa hay and baled straw was destroyed by fire the last week in July at the Agronomy farm. It is supposed that the fire caught from the exhaust of the gas engine being used on the straw baler. The loss will amount to about $1,500, with no insurance.

Mr. C. D. Davis has been appointed Assistant Professor of Farm Crops and will handle most of the instruction in grain crops laboratory. Professor Call left on August 3 to attend a conference of crops teachers at the University of Illinois. He will spend the rest of August on his vacation in Massachusetts. Professor Salmon left here August 5 for South Dakota, where he will spend his vacation.

Mr. Parker attended the cereal pathology field meetings at St. Paul and Fargo and spent some time at each of these stations in studying the plant breeding experimental work in progress. He returned to Manhattan on July 25.

Mr. J. H. Martin, who also attended the cereal pathology meetings, reached Manhattan on July 28 and will spend most of August in preparing seed for the

winter hardiness nurseries for shipment to the northern stations, and in taking notes on the wheat hybrids and making up the planting lists of this material.

Hays Branch Station, Hays (A. F. Swanson). (August 1) The row crops are badly in need of a rain as only a few scattered showers have fallen since the 3-inch rain of July 4. Thus far the sorghums have not suffered from lack of moisture and the earlier varieties give promise of a fair yield. Rain will be needed for the later sorghums, as a few have not yet headed.

The weather for the past two weeks has been hot and dry. The maximum temperatures have ranged from 90 to 100 degrees every day.

The plowing on the project will be completed early this week. The ground is extremely hard and moisture will be needed in getting the ground ready for fall seeding.

The experimental thrashing was completed ten days ago but the tabulation of yields has not been completed.

COLORADO

Agricultural College, Fort Collins (Barberry Eradication, John R. Fitzsimmons). (June 30) June found the barberry eradication campaign being pushed with renewed effort along the line of farm-to-farm survey. Two teams of two men each have finished Adams, Arapahoe, Elbert, Fremont, Larimer, Logan, Washington, and Yuma counties. The majority of the territory surveyed has been in the dry-land section of the State. During the month, 453 bushes were found and 604 removed. Forty-five bushes were found heavily infected at various places throughout the counties worked, and 74 sprouting bushes were found in and around Denver, all heavily infected. While conditions seemed favorable for rust on the grains and grasses they were not found infected near the bushes except in one or two cases.

Nearly all fields examined showed leaf rust but little stem rust. Reports have been coming in from Weld and Logan counties that about 50 per cent of the wheat is being lost from stem rust. Our field men reported that leaf rust was heavy in these sections but no stem rust. During July the pathology department of the college will survey these districts to determine whether stem rust or leaf rust is present.

(July 30) The month of July has been a busy one for all connected with the work in Colorado. Two teams have been working in the dry-land section of eastern Colorado, in Baca, Cheyenne, Kit Carson, Lincoln, Morgan, and Kiowa counties. Very few bushes have been found in this area due chiefly to the difficulty of growing shrubbery.

Black stem rust is quite widely distributed through this country on the spring wheat. The winter wheat matured early enough to avoid the rust, which seemed to enter the State from the east and southeast. Close observation of the stem rust situation showed that the spread was from the eastern border, where it was first noticed about June 10. Field observation taken along the foot-hill section west of Denver July 29 showed very little stem rust in either the winter or spring wheat.

The month of July marks the completion of most of the original survey work in this State. The remainder of the summer will be devoted to a resurvey of the irrigated section east of the foot hills along the Platte and Cache le Poudre rivers.

Akron Experiment Farm, Akron (F. A. Coffman). (July 16) Akron Field Station is still suffering from one of the longest and most severe dry spells in its history. During the three months from April 16 to July 16, less than 3 inches of rain have been received. The heaviest precipitation recorded during the entire period was less than a half inch, which came July 4. The results of this storm have largely disappeared and the soil is now about as dry as before. During the past three weeks the weather has been excessively warm. The highest temperature during the period was 101°, which is nearly the record maximum temperature for Akron Field Station. At the present time there seems little hope for any immediate relief from the heat wave, and the prospects do not appear favorable for an early breaking of the drought.

Harvest in northeastern Colorado started the week of July 4 and, with the ideal weather conditions for harvesting, the operation has gone forward with unusual speed. In the immediate vicinity of the station probably close to 90 per cent of the winter wheat has been harvested. The growing popularity of the harvester-thrasher is very pronounced. In the five seasons the writer has been in this part of Colorado, he has seen the former practice of heading and stacking the grain replaced on probably 50 per cent of the wheat acreage by the more rapid method of harvesting and thrashing with the combine. The use of the 1,500 to 3,000-pound truck to haul the wheat to market has been equally as rapid in its growth as has been the use of the combine. A very large number of farmers now own their trucks and do their wheat hauling themselves, while a few seasons ago the trucks were owned and operated by persons living in towns.

Wheat in northeastern Colorado, as a whole, will yield but slightly less than in 1920. Regardless of the very dry season experienced in this immediate section, some fields are yielding well over 25 bushels. Many large fields are reported to be yielding 30 bushels or over. One field of Kanred, growing on fallow, is reported to be yielding close to 40 bushels over an entire acreage of some 220 acres. This field is located but two miles from the Akron Field Station, and has received but slightly more rain than has been received at the station.

Harvest on Akron Field Station is well advanced. Harvest of the grain on the cereal project started July 7, and at the present time is nearly 75 per cent completed. All of the winter wheat and barley plats and nursery rows have been cut and the greater part of the oats and spring wheat experimental seedings have already been harvested, or will be harvested within the next few days. Since harvesting our field plats our estimates on the yields of our best winter wheat plats have risen considerably. It appears very probable that some of our winter wheat plats will produce close to 35 or 40 bushels.

Corn and other row crops in this section have been making an unprecedented growth during the past two weeks. Corn has only started to tassel and is nearly shoulder high. This is well above the average height of corn in this section at this time of the season. However, the dry weather has begun to show its effects and without considerable moisture within the next two weeks the corn crop will not be very large this year. Sorghum crops are suffering much less than the corn.

During the half month just past, Akron Field Station has been visited by Mr. John Martin of the Office and Prof. John H. Parker of the Kansas Agricultural College on July 5, and by Mr. R. W. Shafer, Assistant County Agent Leader, from the Colorado Agricultural College, and County Agent Nelson from Lincoln Co., Colo., on July 16.

(July 31) One of the longest and most severe droughts in the history of Akron Field Station came to an end the evening of July 22, when a heavy local shower of 1.78 inches of rain was received. During the remainder of the month of July, two other showers were received which brought the total precipitation for the half month, July 16 to 31, up to nearly 2.50 inches. Since the drought was broken on July 22, the temperatures have moderated considerably and the excessive heat wave seems to have passed. At the present time the weather is comparatively cool, and the soil appears to be well supplied with moisture.

Weather during July was very favorable for harvesting and thrashing. Harvest of winter wheat in this section was completed about July 25. Many fields are reported to have yielded as much as 20 bushels to the acre, while a few fields have been reported to have yielded as much as 30 and even 40 bushels to the acre. Thrashing of the wheat crop in this section has been nearly half completed, due to the increased use of the combine. The local elevators report that the crop is not exceptionally well filled this season. Much of the wheat is not testing over 58 pounds to the bushel. With the increased acreage of wheat in this section the capacity of the local elevators is not sufficient to take care of the crop. One new elevator is now being built at Akron, and it has been reported that at least two more elevators will be erected soon. This would make about 10 elevators on the Burlington Railroad in Washington county. The number of elevators in the county should not be surprising, however, since this county alone produced a crop of over five and a half million bushels of grain in 1920, of which more than three million bushels was wheat. Crop Report Bulletin No. 20 for Colorado credits the three most important grain producing counties of northeastern Colorado, Logan, Washington, and Yuma, with the production of nearly 17,500,000 bushels of grain of all kinds in 1920. Of this total nearly 9,250,000 bushels of wheat were produced. A preliminary report from the same source predicts a considerably larger yield for these counties in 1921 than was produced in 1920. It is estimated that less than 5 per cent of the grain grown in these three counties is grown under irrigation.

Weather conditions during the past ten days have been very favorable to corn and the sorghum crops. Corn is only about half tasseled so that it is very probable that the dry weather has not injured it very severely. From present prospects it seems probable that the corn crop in this section may be nearly as large as in 1920. The lower production is due to poor stands rather than to dry weather and burning.

Work on Akron Field Station has progressed very rapidly this month. At the present time the work on the station is fully one month ahead of where it was last year at this time. On the cereal projects only about a half day of harvesting remains to be done and nearly two-thirds of the thrashing has been completed. With favorable weather conditions, it is possible that thrashing with the large machine will be completed before the end of the first week in August. As soon as the plat thrashing is completed the nursery thrashing will be started.

Considering the severity of the past season some very good yields have been produced. Many of the winter wheat plats gave yields in excess of 25 bushels while the best plat yielded about 40 bushels to the acre. Several plats of barley, grown on fallow, gave yields of between 25 and 30 bushels. As yet no yields can be given for spring wheat or oats, since only the winter wheat and barley plats have been thrashed.

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel). No report.

WYOMING

Cheyenne Experiment Farm, Cheyenne (A. L. Nelson). (August 1) The precipitation for the last half of July has been insufficient for the best growth of crops. The total rainfall for this period (0.91 inch) occurred July 18, 22, 28, and 31. All of these were light showers and did little good to crops.

Crops seeded on fallow and disked corn stubble land are in fair shape but other crops are suffering. Corn seeded on a well prepared seed bed is withstanding the drought fairly well.

The winter wheat is ripe and harvesting has commenced. That seeded on fallow before September 20 is about 42 to 44 inches tall. Yields of 30 bushels per acre, or perhaps better, are expected from some of the plats, especially the date-of-seeding plats. Seedings in disked oat stubble of August 15 and September 1 will yield from 12 to 15 bushels per acre. The grain from this crop appears to be of exceptionally good quality.

Maximum temperature for period, 98 degrees on July 22; minimum temperature, 52 degrees on July 20 and 25.

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, Ralph U. Cotter). (August 1) The first ten days of July were spent in the office preparing monthly and half-yearly reports. The rest of the month has been spent doing rural survey work in Niobrara, Weston, and Crook counties. The work in Crook county was delayed about a week due to unforeseen conditions, but it is expected to finish the necessary survey in Crook and Weston counties in about ten days. Rural survey work will then be continued in Sheridan county.

But one new property having barberries was located during the month. This was found at Lusk, Niobrara county. Lusk was one of the places not visited last year, but was visited by Hess two years ago. There is but one purple barberry bush on the property and no trouble is expected in having it removed. I did not see the owner when in Lusk, but have written to him since.

No publicity work has been done in Crook county until this year, but the people seem to be sold on the barberry campaign fairly well.

Rust has been found in but few places in the eastern part of the State and only in isolated instances. There is nothing like a general attack or epidemic such as was experienced last year.

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, H. C. Gilbert). No report.

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel). No report.

State College of Agriculture, Agricultural College (Barberry Eradication George C. Mayoue). (June 30) During June, most of Ransom and Lamoure counties and four townships of Cavalier county have been completed in the farm-to-farm

original survey. Practically every bush located in the county during the month was moderately to heavily infected. Several of the bushes which were located in towns were not infected. However, the most severe infections of barberry bushes in North Dakota have been found this year. The heaviest infection was found on bushes in the country near Lisbon, Ransom Co., and Edinburg and Milton, Cavalier Co.

Some resurvey work was completed in towns when the scouts could not get in the fields on account of muddy roads. Ten sprouts were found on a property where the bushes had been eradicated in 1917. Infected bushes were reported from Edmunds, Stutsman Co.

Black stem rust on the grain has been reported from all the counties east of the Missouri River and from Divide, Adams, Bowman, Dunn, and Golden Valley counties west of the river. Infection averaged from 2 to 10 per cent, according to the reports.

The first infections on barberry in this State were found at Lisbon on June 6. Dr. Stakman's report on a sample of this finding which was sent to him was that those bushes were possibly first infected about May 20.

(July 30) The farm-to-farm survey was completed in Ransom, LaMoure, Walsh, and Sargent counties and is well under way in Cavalier, Nelson, and Ramsey counties, more than half of each of the last three counties being completed.

A total of 578 bushes on 11 properties were found and destroyed during the month of July. Of that number, 175 bushes in Ward county and 48 bushes in Bottineau county were reported to the office, and the report stated that all of the bushes have been eradicated. However, a check will be made in the near future on the properties where these bushes were found.

In one planting on a farm near Sheldon, Ransom Co., 300 bushes were found. About half of that number were escaped bushes which had scattered adjacent to the original planting. This is the first time since the beginning of the campaign in 1917 that escaped or wild bushes have been found in North Dakota. The owner of that planting said that he had planted bushes about twenty years ago, and that he had never been able to raise any grain on the land adjacent to that hedge on account of severe rust. He also stated that after he had burned a straw pile which had stood for two years about twenty rods from the planting he noticed that the infection on the bushes was very much less. A moderate infection was found by the scouts on those bushes July 7.

Demonstrations were made during the month at the Interstate Fair, Fargo, July 11 to 16; Ramsey County Fair, Devils Lake, July 11 to 14; State Fair, Grand Forks, July 18 to 23; and Cavalier County Fair at Langdon, July 26 to 29. Much more interest than ever before was shown in our demonstrations this year.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.). (August 1) The hot, dry weather continued into the latter part of July, except for showers amounting only to about 0.2 inch recorded July 17 and 18. On July 26 rainfall of 1.98 inches was recorded. A precipitation of 0.56 inch was also recorded July 27. These rains, though too late to be of any benefit to flax and cereal grains, will be of very material benefit to corn and other late maturing crops.

The last of the barley varieties were harvested July 16 and the last of the wheat varieties, July 19.

Five of the flax varieties, all belonging to the wilt-resistant, early-maturing short fiber type, were harvested with a binder and will probably yield some seed. The later-maturing typical seed flaxes and one variety of the tall fiber type were mowed as complete failures. Nearly all flax rows in the nurseries have set enough bolls to warrant harvesting, though yields will be poor.

Mr. A. C. Dillman left on July 17 for points in western North Dakota and Montana, and returned July 29. Mr. T. R. Stanton, who arrived here July 16, left July 17.

Mr. L. R. Waldron, plant breeder, North Dakota Agricultural Experiment Station, visited the station July 20.

Mr. J. A. Clark visited the station on July 27 and Mr. H. N. Vinall of the Office of Forage Crop Investigations was here July 29.

Maximum temperature for the last half of July was 103°, recorded July 22; minimum, 48°, recorded July 31; precipitation, 2.78 inches.

Dickinson Substation, Dickinson (Ralph W. Smith). (August 1) The month of July was unusually hot, being similar to June in that respect. The mean temperatures for June and July, respectively, were 68.5 and 71.3°. These temperatures were exceeded by those of 1919 only, when the mean temperatures for those months, respectively, were 71 and 73°. The average means for those two months during the past 14 years were 61.6 and 67.7°, respectively. The rainfall for June this year was 3.09 inches, being slightly above normal, while that for July was 1.61 inches, being about a half inch below normal.

Extremely hot and dry weather during the first half of June injured crops severely, while a lesser drought in July did further damage, so that yields in this vicinity and also in the region to the south and east of Dickinson for a considerable distance will be light. Crop conditions north of Stark county are reported to be very good.

Crops ripened very early this year and the harvesting of cereals at the Substation is finished with the exception of nursery hybrids and a few late varieties in plats. Farmers in this vicinity are in the midst of harvest. Much of the grain is being headed because of the shortness of the straw. Some oats is being mowed for hay.

The Substation was visited recently by Mr. J. A. Clark, Prof. L. R. Waldron of the State Experiment Station, and by Mr. H. N. Vinall of the Office of Forage Crop Investigations.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May). No report.

State College of Agriculture, Bozeman (Barberry Eradication, H. Elwood Morris). (July 16) I did not think it advisable to make much of a survey for rust until some indication reached me that it was present to some degree. We had asked the cooperation of the county agents and were waiting for them to report before we made any extensive trips.

We have had no reports from them until about July 9, when the county agent from Roosevelt county reported that rust was present there to quite an extent.

Several other reports of rust have come from individuals in Richland and Roosevelt counties. These are in the northeastern part of the State adjoining North Dakota. I telegraphed for some samples of rust to make sure that it was not leaf rust infection and I should receive the samples either today or Monday. If it is stem rust I will probably make a trip into that section next week. I prophesy it will be a wind borne infection, probably coming from North Dakota, as practically no barberry was found in that section and that was one of the few in which we made a farm-to-farm survey.

I have been over the Gallatin valley several times and have inspected many fields without finding any rust. The native grasses apparently are not rusted much this year, in fact we have found no rust up to the present time.

Last week I made a trip to Paradise Valley, south of Livingston, and inspected several fields without finding any indications of rust.

Jennison has been working in the western part of the State for the past few weeks and thus far has reported no rust. From these indications I think rust has been rather scarce throughout the State or has been, until the past few days. How fast it will spread from the northeast section and what damage it will cause cannot be predicted.

(August 2) About a week ago Professor Jennison started on a trip to the eastern and northern parts of the State to investigate the presence of wheat rust. From reports that he has submitted to this office he has found a slight amount of rust over almost all the territory. However, this is doing practically no damage. He is also checking up on barberry sprouts throughout this locality.

About two weeks ago I submitted a questionnaire to the county agents east of the divide and I have received answers from fourteen of the agents. In answer to the question, "Is wheat rust prevalent in your county?" each and every one has answered, "No." Replies have been received from agents in the following counties: Teton, Hill, Choteau, Cascade, Fergus, Blaine, Phillips, Valley, Richland, Dawson, Fallon, Stillwater, Yellowstone, and Big Horn.

WESTERN BASIN AND COAST AREAS
(North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (L. C. Aicher). No report.

OREGON

Sherman County Branch Station, Moro (L. E. Stephens). (July 30) Comparatively cool weather prevailed during the entire month of July, with no rain. The highest temperature recorded was 94° on the 23rd.

Thrashing of winter wheat in the vicinity of Moro began about the middle of the month and farmers are reporting yields of from 30 to 45 bushels per acre. Thrashing on the Station began about July 22 and with favorable weather will be completed before the middle of August. The following is a summary of the yields obtained in the tillage and fertilizer experiments:

YIELDS OF SPRING WHEAT IN TILLAGE EXPERIMENTS

Tillage		Average yield, bushels per acre
Early fall plowed, dry	(1)	38.9
Late fall plowed, wet	(1)	38.9
Deep spring plowing	(1)	37.4
Shallow spring plowing	(1)	35.8
April plowed, clean fallow	(2)	34.5
April plowed, neglected fallow	(3)	26.4
May plowed, clean fallow	(2)	30.8
May plowed, neglected fallow	(3)	28.2
June plowed, clean fallow	(2)	25.7
June plowed, neglected fallow	(3)	24.3

(1) Average yield of eight 1/10 acre plats.
(2) " " " five 1/10 " " .
(3) " " " three 1/10 " " .

YIELDS OF TURKEY WINTER WHEAT IN FERTILIZER EXPERIMENT

Treatment	Plat Nos.	Yield, bushels per acre: Total	Average
Checks No. 1	1581	33.2	
	1681	43.3	38.3
150 lbs. nitrate	1582	39.3	
	1682	44.0	41.7
200 lbs. superphosphate	1583	40.0	
	1683	43.2	41.6
Checks No. 2	1584	43.2	
	1684	42.2	42.7
100 lbs. sulphur	1585	42.5	
	1685	42.3	42.4
100 lbs. nitrate and 200 lbs. superphosphate	1586	46.7	
	1686	44.2	45.5
Checks No. 3	1587	47.2	
	1687	41.3	44.3
200 lbs. superphosphate plus 6 T. manure as top dressing	1588	46.7	
	1688	40.0	43.4
400 lbs. Beaver brand complete fertilizer	1589	46.0	
	1689	41.0	43.5
Checks No. 4	1590	45.2	
	1690	35.3	40.3

In a rate-and-date of sowing experiment with Turkey winter wheat in single twentieth-acre plats, the following results were obtained:

Date sown	Rate sown	Yield, bushels per acre Total	Average
September 8, 1920	2 pecks	29.7	
"	3 "	44.3	
"	4 "	42.0	
"	5 "	42.3	
"	6 "	37.7	
"	7 "	42.0	
"	8 "	41.3	39.9
September 22, 1920	2 pecks	46.0	
"	3 "	41.7	
"	4 "	44.0	
"	5 "	41.7	
"	6 "	44.0	
"	7 "	40.0	
"	8 "	39.7	42.4
October 7, 1920	2 pecks	34.3	
"	3 "	37.3	
"	4 "	43.7	
"	5 "	39.7	
"	6 "	36.3	
"	7 "	37.0	
"	8 "	39.3	38.2
October 21, 1920	2 pecks	28.0	
"	3 "	28.7	
"	4 "	31.7	
"	5 "	31.3	
"	6 "	27.7	
"	7 "	31.3	
"	8 "	25.0	29.1
November 3, 1920	2 pecks	23.0	
"	3 "	23.6	
"	4 "	25.7	
"	5 "	25.3	
"	6 "	25.7	
"	7 "	25.7	
"	8 "	26.3	25.0

CALIFORNIA

Rice Field Station, Biggs (J. W. Jones). (August 1) July has been a very favorable month for rice. The maximum temperature was 107° on July 8; minimum temperature, 53° on July 30. On 14 days the temperature was 100° or above, and on 6 additional days the temperature was 99°.

A number of the earliest varieties in the nursery have started to head, and many other varieties are booting. The rice on the station looks fairly good. However, it lacks the dark green color and vigorous growth which is so noticeable on new land.

All of our time during July has been spent pulling water grass. Most of the commercial fields in this vicinity are quite foul this year.

Plant Introduction Station, Chico (V. H. Florell). No report.

Agricultural Experiment Station, Davis (F. N. Briggs). No report.

Agricultural Experiment Station, Berkeley (W. W. Mackie). No report.

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CEREAL COURIER

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 August 20, 1921 No. 20
Personnel (August 11-20) and Field Station (August 1-15) Issue.

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PERSONNEL ITEMS

Dr. C. R. Ball left Washington August 13 for an inspection trip on cooperative cereal investigations in the North Central and Great Plains States. He expects to return to Washington about September 15.

A. C. Dillman visited the Minnesota and North Dakota Stations on August 5-8 to consult with agronomists and pathologists regarding flax breeding.

Dr. F. E. Kempton left Washington August 13 for an inspection trip through the western part of the barberry eradication area. He expects to be out of Washington about three weeks.

F. D. Richey left Washington August 19 for a week's trip to New York and New England to inspect corn experiments and to consult with plant breeders.

V. F. Tapke, assistant pathologist in cereal-smut investigations, left Washington August 6 for points in Illinois and Indiana, and returned August 18. He went to Granite City, Ill., to confer with Illinois State men on methods of procedure in operating the seed-treatment plant for flag-smut control; to Urbana, Ill., to confer with Mr. P. A. Glenn on flag-smut control; and to different counties in Indiana to confer with county agents on loose-smut control in Indiana and to get a supply of seed wheat heavily infected with loose smut for experiments during the coming season.

VISITORS

Dr. E. J. Butler, mycologist in charge of the Imperial Bureau of Mycology at Kew, London, who came to this country as a guest of the American Phytopathological Society to attend its summer field meetings at St. Paul, Minn., and Fargo, N. Dak., completed a trip to several points in the States and spent August 8-14 in Washington before returning to England. On the evening of August 12 pathologists of the Bureau entertained Dr. Butler at dinner at the Cosmos Club. Following the dinner a number of matters of international importance in the field of plant pathology were discussed.

Dr. S. B. Fracker, State Entomologist in Wisconsin, who is the law-enforcing officer in the barberry eradication campaign in that State, was an office visitor August 17.

Dr. Rudolf Kuraz, Agricultural Attache and Secretary of the Czechoslovak Legation, was an office visitor August 16.

Prof. N. I. Vavilov, Director of the Bureau of Applied Botany and Plant Breeding, Petrograd, Russia, was an office visitor August 20. In company with Prof. Arthur A. Jaczewski, Director of the Institute of Mycology and Phytopathology, and President of the Russian Mycological and Phytopathological Society, also of Petrograd, he is visiting a number of the American experiment stations and will return here for several days in September.

Dr. J. C. Walker, pathologist in the Office of Cotton, Truck, and Forage Crop Disease Investigations, with headquarters at Madison, Wis., was an office visitor August 16.

PUBLICATIONS

The paper entitled "A Cytological Study of Infection of Early Baart and Kanred Wheats by *Puccinia graminis tritici*," by Dr. Ruth F. Allen, has been approved for publication in the Journal of Agricultural Research.

The paper entitled "The Accumulation of Aluminum and Iron Compounds in Corn Plants and Its Probable Relation to Root Rots," by G. N. Hoffer, has been approved for publication in the Journal of Agricultural Research.

The brief paper entitled "*Wojnowicia graminis* (McAlp.) Sacc. and D. Sacc. on Wheat in the United States," by H. H. McKinney and A. G. Johnson, has been submitted for publication in Phytopathology.

The manuscript entitled "Cereal Experiments on the Belle Fourche Experiment Farm," by John H. Martin, was submitted for publication as a Department bulletin on August 19.

EXAMINATION FOR SCIENTIFIC ASSISTANTS

The Civil Service Commission has announced the usual fall examinations for the position of scientific assistant in the Department of Agriculture, including the examination for scientific assistant in agronomy, to be held September 7 and 8.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens, and Substations (R. A. Childs). No report.

SOUTH CAROLINA

Pee Dee Substation, Florence (Hugo Stoneberg). No report.

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor). The thrashing of rod rows of wheat, oats, and rye has been completed. About one acre of buckwheat was sown on July 19 in a yield test of the Japanese and Silverhull varieties. Both of these varieties were in blossom on August 10, approximately three weeks from date of planting. The lateness of seeding undoubtedly hastened the flowering date.

An electrical treatment experiment was conducted at Arlington during the 1920-1921 season, in which a uniform seed lot of Purplestraw wheat, C.I.No. 1915, was used. In the electrical treatment the seed was placed in a stone sink and completely covered with 25 gallons of water in which 6.5 pounds of common salt (NaCl) had been dissolved. A current of 1.8 amperes was then allowed to flow through the solution for 3.5 hours. Another lot was soaked 3.5 hours in the salt solution without the application of electricity, while a third was soaked for a similar period in clear water. All the seed was then dried in the greenhouse for 24 hours. At the time of seeding, October 1, the soaked seeds were still a trifle swollen. For this reason the soaked seeds were sown at a 7-peck per acre rate instead of the 6-peck rate used in the checks. Three fortieth-acre plats were sown with each lot of seed, with a check plat sown to untreated seed at each end of the series and between the replications. A uniform stand existed on all 13 plats, both in the fall and in the spring.

The yields of the plats follow, in bushels per acre:

	Check, untreated	Electrical	Salt	Water
	28.2	26.2	25.1	27.3
	28.7	24.7	23.8	24.7
	24.9	21.2	16.3	21.6
	21.2			
Averages:	25.7	24.0	21.7	24.5

NEW YORK

Cornell University Experiment Station, Ithaca (H. H. Love). No report.

Rhinebeck (Corn Investigations, L. S. Mayer). (August 16) During the first half of the month the early and normal planting tests with corn conducted cooperatively by the Cornell University Agricultural Experiment Station and the State School of Agriculture at Delhi and several cooperative varietal experiments in Orange County, New York, were visited. These tests are located in the most important dairy section in the State where the production of silage is important.

The State Experiment Station at Amherst, Mass., Kingston, R. I., and New Haven, Conn., were also visited. The corn experiments conducted by Dr. D. F. Jones at New Haven were of particular interest.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Crowley Rice Station, Crowley (J. Mitchell Jenkins). (August 7) The weather has been quite dry for the past ten days, enabling us to have weeds removed from rice and soybeans. Many rices are heading in both the nursery and increase plats. The Porto Rican rices are growing very nicely, and a few varieties are heading.

Mr. B. de Novaes of Brazil is spending some time with us for the purpose of studying our methods of harvesting rice, also methods of irrigation, together with our operations on the station. He has been traveling in Europe, and for the past several weeks has been a student of the summer school of Louisiana State University. He will probably take up special work at the University this winter.

Mr. E. B. Brown, who arrived yesterday, seems very well pleased with the appearance of his breeding plats and is making many selections. This corn has attracted much attention, and I have had several inquiries regarding seed for another year.

A few fields of rice have been thrashed, and the price received is fairly good. The greater part of the crop, however, will not be harvested until the latter part of September or the first part of October.

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler). (August 16) Beginning August 1, we have had two weeks of wet and rather cool weather. The rainfall during these first two weeks of August has averaged more than 3 inches over the State as a whole and has broken the drought in time to save the corn crop, except perhaps in a few counties along the Mississippi River where more rain is needed. Much of the corn was injured by the drought before the rains began but the average condition of the crop now is good.

The last few days have been quite cool. Fall plowing which had been delayed by the dry condition of the ground has begun.

Yields in bushels per acre of wheat varieties in duplicated plats 6 by 120 feet at Columbia in 1921 were as follows:

Variety	Yield	Variety	Yield
Fulcaster	27.9	Harvest Queen	23.8
Michigan Wonder No. 21	27.5	Poole E-3	23.7
Michigan Wonder No. 8	26.0	Mich. Wonder No. 141	23.4
Dietz	26.0	Mich. Wonder	22.6
Fulcaster selection	25.8	Fulcaster (Outl)	21.9
Mich. Wonder No. 221	25.6	Early Ripe	21.1
Kanred	25.0	Poole selection	20.7
Mich. Wonder No. 209	24.5	Early Ripe No. 26	19.6
Fulcaster 8-y	24.3	Old Ironclad	19.2
Mediterranean No. 31	24.0	Nigger	17.4

IOWA

Iowa State College, Ames (Barberry Eradication, R. H. Porter). No report.

Agricultural Experiment Station, Ames (L. C. Burnett). (August 15) Harvesting and thrashing were completed on the 10th. Yields of most of the

plats were somewhat disappointing, but on the average were better than the average farm yields. Our oats will average 30 bushels to the acre, the better varieties going as high as 40 or 50. Winter wheat yields were low except on early seeded plats and on plats which were sown without plowing, following soybeans and early potatoes. We are suggesting to farmers of the northern part of the State that they try the experiment of seeding in this way during the coming season. Land is now being prepared for the fall seeding of wheat. We expect to sow somewhat earlier than has been the custom during the past two or three years.

ILLINOIS

State Entomology Building, Urbana (Barberry Eradication, L. R. Tehon). (August 16). Barberry eradication in Illinois for the month of July has included an intensive survey of a portion of Lake County, a portion of Cook County, a portion of Dupage County, and also an intensive survey of that portion of the "Lake Shore" district of Chicago lying in Lake County. The farm-to-farm survey of Lake County and the "Lake Shore" survey of the towns in Lake County has been satisfactorily completed and good headway has been made in Dupage and Cook counties.

With a small amount of town work along the "Lake Shore" in Cook County, 426 town properties on which there were 4,624 bushes and 102 country properties on which there were 3,996 bushes represent the month's findings. Of the country properties, 25 had escaped bushes, totaling 503. So far, 2,125 bushes have been removed from 243 of these properties.

The following tabulation is a summary of the office and field work for the month:

Letters received	189
Letters written	185
Barberry post cards distributed	758
Farmers' Bulletin No. 1058 distributed	849
Yearbook Separate No. 796 distributed	216
Eradication posters sent out	92
Articles for newspapers and other publications	17
Demonstrations	9
Telegrams	28
State Inspection Act	131
State Barberry Regulation	116
Requests for information	2
Reports	1
Miles traveled by automobile	4,196
Talks to individuals	900
Red tags used	4,634

INDIANA

Purdue University Agricultural Experiment Station.

Corn Root, Stalk, and Ear Rots (G. N. Hoffer). No report.

Leaf Rust Investigations (H. S. Jackson and E. B. Mains). No report.

Purdue University College of Agriculture (Barberry Eradication, A. J. Rosmer). No report.

OHIO

College of Agriculture of Ohio State University, Columbus (Barberry Eradication, John W. Baringer). (August 7) The original rural survey was extended over an area equivalent to two and a half counties in July. In addition, considerable resurvey and check-up work was done in Dayton, Piqua, Troy, and Sidney. A total of 1,400 barberry sprouts and seedlings was also removed from a wild area, on seven farms, near Lewisburg in Preble County. Six men and three automobiles are being used in Ohio.

A total of 1,496 barberry bushes on 332 new locations was found and removed. On resurvey, 397 bushes were removed on 96 premises.

After the rural survey of Shelby and Auglaize counties is completed it is planned to begin the farm-to-farm work before September 1 in Fulton and Lucas counties immediately south of the Michigan line.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy). (August 16) During the month of July farm-to-farm survey work was completed in Cass and Wayne counties. Deep sand was encountered in some sections of Cass County and this had a tendency to delay the work. A number of summer resorts are located about the many lakes in the county and, although many of the cottage owners come from outside the State of Michigan, they showed an excellent spirit of cooperation.

Wayne County presented the usual problem of a county containing a large city. The farms are small and this gives the owner more time for planting shrubbery in his yard. It also means that there will not only be a road around the section, but in addition roads will divide the section into quarters. Resurvey work was done in all cities of the county with the exception of Detroit.

During the month 160 new barberry plantings were found. These represented 7,800 bushes; over 7,000 bushes were removed during this period.

We were fortunate in having Dr. Rempton with us for a few days during the month. He had an opportunity to observe the field work and when he found barberries in a swamp over a mile from a house, he resolved that barberries are gifts to Michigan and not acquirements.

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson). No report.

Department of Agriculture, State Capitol, Madison (Barberry Eradication, Noel F. Thompson). No report.

MINNESOTA

College of Agriculture, University Farm, St. Paul (Barberry Eradication, Leonard W. Melander). No report.

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman). No report.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger). (August 15) The first ten days of August were a continuation of the hot, dry weather of July. Beginning with the 12th there has been an abundance of rain and some dry weather is needed now to allow harvesting of some of the date-of-seeding plats. The drought of July and early August is likely to cut the yields of some of the milo plats, especially those which were heading or booting during the dry period. The rate-of-seeding milo which was seeded June 10 should make very high yields this year, as only the very thickest rates had started to head during the dry period.

The second date-of-seeding broomcorn was harvested on August 4, and the third date, seeded May 16, was harvested August 13. As soon as the fields are dry enough some date plats of Dwarf milo, feterita, and Barchet kaoliang will be harvested.

Mr. John M. Stephens of the Office of Dry-Land Agriculture was a Station visitor on August 4 and 5. On August 10 Mr. Burnham of the Lawton Field Station visited the Woodward Station.

Maximum temperature for the first half of August was 107° on the 5th; minimum, 55° on the 3rd. The precipitation for this month to date is 5.11 inches, distributed as follows: August 10, 0.22 in.; 12, 0.74 in.; 13, 2.45 in.; 14, 1.49 in.; and 15, 0.21 in.

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker). No report.

Hays Branch Station, Hays (A. F. Swanson). (August 15) Until August 13 only 0.5 inch of rain fell during the month. Rowed crops had commenced to suffer from dry weather, when on August 13 and 14 a precipitation of 2.1 inches was recorded. Rowed crops are in excellent condition now and the rain will make possible good seed bed preparation for wheat.

The following yields of wheat were obtained at this station for the 1921 season:

Name	C.I.No.	Yield, bu. per acre
Clark's Blackhull	6251	33.0
P 1066	5873	29.9
Kharkov No. 2		29.5
P 1068	5880	29.4
Kanred	5146	29.1
Nebr. No. 6	6249	28.1
Kharkov	1442	28.0
Defiance Hard Winter	6214	27.8
Kharkov	1583	27.7
Crimean	1436	27.7
Station Red	6467	27.5
Turkey	1558	27.2
Kharkov	1583-30	27.1
Improved Turkey	5592	26.9
Pioneer Turkey (Local)		26.8

Malakov	2908	25.8
Tauranian	6202	25.3
Kansas Station 6472		25.0
Nebr. No. 60	6250	23.5
Alberta Red	5197	23.5
Fulmaster		23.2
Iowa No. 1946		22.9
Red Winter	6213	22.3
Minturki	6155	21.2
Nebraska No. 28	5147	21.1
Harvest Queen	6199	20.3
Minhardi	5149	19.6

The following yields of oats were obtained:

Richland (Iowa No. 105)	787	49.0
Burt X Sixty Day	727	48.4
Kherson	459	48.0
Fulghum	708	47.6
Albion (Iowa No. 103)	729	47.1
Burt, Kansas 5219		46.7
Sixty-Day	165	44.9
Iowar		44.9
Aurora	831	44.9
Red Texas (Cooperative Test)		43.2
Kanota (Kansas Fulghum)	839	41.8
Nebraska No. 21	841	28.5

The following yields of barley were obtained:

Flynn	1311	49.0
Coast	630	46.8
Mariout	261	45.2
Blackhull	878	43.7
California Mariout	1455	39.2
Stavropol		37.5
White Smyrna	195	35.4
Beldi	190	33.8
Hannchen	351	32.4
Gatami	575	32.0
Svennals	187	29.7
Odessa	182	28.5
Meloy	1176	27.3
Manchuria	643	25.6
Himalaya	620	23.0

COLORADO

Agricultural College, Fort Collins (Barberry Eradication, John H. Fitzsimmons). No report.

Akron Experiment Farm, Akron (F. A. Coffman). (August 15) Weather conditions during the first half of August have been very favorable for thrashing. Several showers were received, but no periods of wet weather long enough to be detrimental to the shocked grain were experienced this season. As a result all of the grain at Akron Field Station is bright and sound. Thrashing of all of the cereal crops on the station, with the exception of the nursery, has been

completed. Although the season has been unusually dry some very good yields were produced. The highest yielding plat of winter wheat on the Office projects gave an average of 40 bushels to the acre. Many of the spring wheat plats yielded from 10 to 15 bushels, and several of the barley plats averaged better than 25 bushels to the acre. The most surprising yields were made by some of the plats of Burt, C.I.No. 293, and Aurora oats. The average yields on the four replicate plats of each of these two varieties was over 30 bushels. The test weights of the Fulghum oats were especially noteworthy, being 38 to 40 pounds to the bushel.

Corn and sorgo crops are growing well and from present prospects very good yields may be expected. The early maturing varieties of corn in the April 13 seeding of the date-varietal experiment have been in the roasting-ear stage for some two weeks. The June 1 planting in the same experiment is in various stages of tasseling and silking, varying with the varieties. A number of crosses and self-fertilizing experiments are being made this year with Swadley White Dent corn. The object of these experiments is to produce corn varieties of more economic value to this section.

During the past half-month the Akron Field Station has enjoyed visits by Superintendents E. F. Chilcott of the Woodward, Okla., station, and John M. Stephens of the Mandan, N. Dak., station. Other visitors have been Professor Burdick of the Agronomy Department, and Professor McCarty and Mr. P. T. Lister of the Botany Department of the Colorado Agricultural College at Ft. Collins.

Yields in bushels per acre obtained in the regular varietal experiment with 11 varieties of spring oats, grown in replicated fiftieth-acre plats on fallow and corn land at the Akron Field Station in 1921, follow.

		Fallow			Corn Land			
Variety	C.I.No.	1.	2.	Ave.	1.	2.	Ave.	Average
Early:								
Burt	293	33.2	35.9	34.5	25.8	27.0	26.4	30.5
Aurora	831	31.2	33.6	32.4	26.7	29.5	28.1	30.2
Nebraska No.21	841	31.6	31.6	31.6	19.7	26.7	23.2	27.4
Fulghum	708	33.2	24.6	28.9	24.2	26.2	25.2	27.0
Kherson	459	31.2	29.3	30.3	17.2	21.2	19.2	24.7
Albion	729	28.5	30.1	29.3	17.6	22.2	19.9	24.6
Midseason:								
Black American	549	23.7	26.2	25.0	17.3	16.2	16.7	20.8
Golden Rain	493	18.9		18.9	14.5		14.5	16.7
Swedish Select	134	17.2	23.0	20.1	12.2	11.5	11.8	15.9
Colorado No.37	617	16.9	20.1	18.5	14.1	11.5	12.8	15.6
Late:								
White Tartar.	300		11.9	11.9		6.9	6.9	9.4

NEBRASKA

College of Agriculture. University Farm, Lincoln (Barberry Eradication, A. F. Thiel). No report.

WYOMING

Cheyenne Experiment Farm, Cheyenne (A. L. Nelson). (August 15) The weather for the past 15 days has been very dry and fairly warm most of the time. All winter wheats and barleys and part of the oats and spring wheats have been harvested. From plats of winter wheat thus far thrashed exceptionally good

yields have been produced. One [illegible] of Marfed, C.I. No. 5146, in the date-of-seeding experiment produced 40 bushels per acre. Yields of from 30 to 35 bushels per acre are expected to be quite common from seedings on fallow land. The first date-of-seeding of winter wheat was made today.

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, Ralph U. Cotter). No report.

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, R. C. Gilbert). No report.

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel). No report.

State College of Agriculture, Agricultural College (Barberry Eradication, George C. Mayoue). No report.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.) (August 16) During the first half of August temperatures have been moderate and there has been practically no rain.

The rainfall of 2.78 inches during the last half of July has proved of great benefit to corn, sorghums, millet, potatoes, plums, and other late-maturing crops.

Most of the flax varieties in nurseries had already ripened most of their crop before the rain. Nearly all varieties bloomed again profusely after the rain. We are now right in the midst of harvesting the flax nurseries.

Mr. A. C. Dillman left on August 4 for Fargo, N. Dak., and St. Paul, Minn., and returned August 10.

Mr. R. L. Davis of the Office of Fiber-Plant Investigations visited the station August 5 to look over the fiber-flax varieties being tested here for wilt resistance.

Maximum temperature for the first half of August was 96°, recorded August 5; minimum, 44°, recorded August 14; precipitation, 0.02 inch.

Dickinson Substation, Dickinson (Ralph W. Smith). (August 16) Threshing at the Substation was interrupted today by a rain of about 0.6 inch. The thrashing of plats is finished with the exception of flax and proso varieties and some increase plats of wheat. Yields are not yet computed but are quite low. The wheat varieties in replicated plats all yielded less than 10 bushels per acre. Oat varieties yielded about 15 bushels, and barley varieties about 10 bushels per acre.

Harvesting operations in this vicinity are practically finished and thrashing is just beginning. Much of the grain was headed this year because of the shortness of the straw.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May). No report.

State College of Agriculture, Bozeman (Barberry Eradication, H. E. Morris
No report.

WESTERN BASIN AND COAST AREAS
(North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (L. C. Archer). (August 6) The Idamine oat has made a great hit all over the State and wherever it was sent. We are getting splendid letters about it and already are receiving requests for seed. We have some fine fields in the neighborhood of Aberdeen and feel that we will have sufficient seed for everybody.

OREGON

Sherman County Branch Station, Moro (D. E. Stephens). (August 13) Ideal harvest weather has prevailed during the month of August and threshing on the Station, including the nursery, was concluded on August 13. The following table gives the yields of the winter wheat varieties which were grown in triplicate twentieth-acre plats. The bushel weight of practically all varieties will be 60 pounds or better. There was a considerable proportion of yellowberry kernels in nearly all varieties, Alberta Red, C.I.No. 5971, and Blackhull, C.I.No. 6251, having fewer yellowberries than any of the Turkey varieties.

Variety	C.I.No.	Yield, bushels per acre Series 1	Series 2	Series 3	Avge.	Probable Error
Hybrid No. 123	4511	43.7	43.7	43.0	43.5	.18
Hybrid No. 128	4512	45.0	45.0	39.0	43.0	1.60
Nebraska No. 60	6250	40.0	45.0	40.7	41.9	1.24
Fortyfold x Little Club	6681	41.7	42.3	41.7	41.9	.16
Argentine	1589	38.7	44.0	39.0	40.6	1.38
Turkey	1571	42.3	38.0	40.7	40.3	.94
Kharkov	1442-12	42.3	41.3	36.7	40.1	1.36
Blackhull	6251	42.0	42.3	36.0	40.1	1.64
Kanred	5146	42.0	39.0	39.0	40.0	.80
Local Turkey	4429	40.0	40.7	39.0	39.9	.36
Alberta Red	2979	40.0	40.7	38.0	39.6	.62
Triplet	5408	37.3	38.7	40.0	38.7	.54
Alaska x Jones Fife	6682	40.7	39.7	35.0	38.5	1.38
Turkey	1538	38.0	43.3	34.0	38.4	1.94
Red Club	4007	38.0	35.0	38.6	37.2	.88
"Station Red"	6407	37.7	39.3	34.6	37.2	1.04
Alberta Red	5757	36.0	37.3	38.7	35.3	1.06
Red Hussar	6553	33.0			33.0	.00
Super	5544	29.7	33.3	28.0	30.3	1.28
Jones Fife	4468	29.0	29.0	27.3	28.4	[illegible]
Fortyfold	4156	31.7	26.7	26.0	28.1	1.44

In the spring wheat varietal trial, which was in duplicate twentieth-acre plats, a number of Australian wheats were included which, during the past three years, have given satisfactory yields in the nursery. The varieties are arranged in the following table in the order of average yield. Most of the spring wheats are also of good quality. A number of the late-maturing varieties, however, will test only 57 and 58 pounds per bushel.

Variety	C.I.No.	Yield, bushels per acre: Series 1	Series 2	Average	Probable Error
Major	4984	28.7	32.0	30.4	1.32
Federation	4734	30.0	29.7	29.9	.12
Hard Federation	4733	28.7	29.3	29.0	.24
Onas	6221	33.0	23.7	28.4	3.72
Boadiciea	6220	28.0		28.0	
White Federation	4981	26.7	28.7	27.7	.80
Currawa	4082	25.0	29.7	27.4	1.88
Bunyip	4166	27.3	27.3	27.3	.00
Bobs	2826-1	26.0	26.3	26.2	.12
Sunset	4728	25.7	26.7	26.2	.40
Canberra	4986		25.3	25.3	
Early Baart	1697-172	25.0	23.0	24.0	.80
Firbank	4169	23.0	24.7	23.9	.68
Early Baart	1697	24.7	22.3	23.5	.96
Little Club	4066	17.7	26.7	22.2	3.60
Red Bobs	6255	25.0	19.0	22.0	2.40
Pacific Bluestem	4067	20.0	23.0	21.5	1.20
Marquis	4158	16.0	23.3	19.7	2.92
Ruby	6047	15.0	19.7	17.4	1.88
Kota	6248	15.3	18.7	17.0	1.36
Average				24.9	

Spring barley and oat varieties were also grown in duplicate twentieth-acre plats and the yields per acre are given in the table on the following page. All spring barleys were very short, California Mariout being the shortest. This variety, which more closely resembles Beldi, C.I.No. 190, than any of the other varieties, did not yield nearly as well as the Beldi variety.

Variety	C.I.No.	Yield, bushels per acre Series 1	Series 2	Average	Probable Error
Spring Oats:					
Emerson	459	53.8	48.4	51.1	2.16
Western Wonder		48.8	49.4	49.1	.10
Three Grain		48.8	46.3	47.6	1.00
Sixty-Day	165	46.9	46.9	46.9	.00
	357-1	48.1	45.3	46.7	1.12
Victory	560	42.5	50.6	46.6	3.24
Sixty-Day	165-1	48.1	43.1	45.6	2.00
Richland	286	45.0	38.1	41.6	2.76
Sixty-Day	729	44.4	38.8	41.6	2.24
Siberian	635	33.1	43.8	38.5	4.28
Swedish Select	134-1	36.9	35.0	36.0	.76
Shadeland Climax	681	35.0	36.9	36.0	.76
Fulghum	708	28.1	26.9	27.5	.48
Average				42.6	
Spring Barley:					
Peruvian	935	38.8	47.9	43.4	3.64
Beldi	190	41.3	42.9	42.1	.64
Mariout	261	43.8	39.6	41.7	1.68
Peru	702	35.8	47.5	41.7	4.68
Smyrna	S.D.28-7-15	40.8	40.4	40.6	.16
Flynn	1311	40.8	36.7	38.8	1.64
Coast	626	37.9	38.8	38.4	.36
Smyrna	658	39.2	36.2	37.7	1.20
Odessa	927	35.0	37.5	36.3	1.00
Himalya	620	34.9	37.1	36.0	.88
Meloy	1176	30.0	39.6	34.8	3.84
Treci	936	31.7	37.1	34.4	2.16
Hannchen	531	29.2	37.5	33.4	3.32
California Mariout	1455	31.2	35.4	33.3	1.68
Svannals	187	30.4	35.0	32.7	1.84
Hanna	906	25.2	27.5	26.4	.92
Average				37.0	

CALIFORNIA

Rice Field Station, Biggs (J. W. Jones). No report.

Plant Introduction Station, Chico (V. H. Florell). No report.

Agricultural Experiment Station, Davis (F. N. Briggs). No report.

Agricultural Experiment Station Berkeley (W. W. Mackie). No report.

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CEREAL COURIER

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture,
(NOT FOR PUBLICATION)

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Vol. 13 August 31, 1921 No. 21
Personnel (August 21-31) and Project Issue.

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PERSONNEL ITEMS

L. C. Aicher has accepted the superintendency of the Hays Branch Station, Hays, Kans., and will resign from the superintendency of the Aberdeen (Idaho) Substation as soon as a successor there can be appointed. H. L. Kent, formerly superintendent of the Hays Branch Station, has been elected president of the New Mexico Agricultural College.

Dr. Carleton R. Ball addressed the farmers of Piatt Co., Illinois, at the county fair at Monticello, August 25, on the work of the Department of Agriculture.

Dixon L. Bailey has been appointed, effective September 1, as agent in stem-rust investigations at University Farm, St.Paul, Minn., where he will assist Dr. E. C. Stakman.

Burton B. Bayles has been appointed unskilled laborer in connection with cooperative cereal experiments at the Kansas Agricultural Experiment Station, Manhattan, Kans., effective September 1.

The temporary appointment of Keller E. Beeson, who has been assisting in the barberry eradication campaign in Indiana, was terminated August 31.

Dwight F. Bracken has been appointed temporary field assistant, effective September 1, to assist in seed treatments for the control of flag smut of wheat in Madison Co., Ill., and to make germination and chemical tests.

The appointment of Wallace Butler of San Antonio, Texas, as field assistant in stem-rust investigations, has been terminated. He will continue to render intermittent service in these investigations as agent.

The appointment of Dr. G. H. Coons as field assistant in the barberry eradication campaign in Michigan was terminated August 28, but Dr. Coons will be continued from that date as collaborator.

Hurley Fellows has been appointed field assistant to assist in cooperative cereal disease investigations in Wisconsin, effective September 1.

Claude Leist, field assistant in the barberry eradication campaign in Illinois, resigned on August 27.

Karl P. Link has been appointed temporary field assistant in connection with the cooperative investigations of wheat scab at the Wisconsin Agricultural Experiment Station, effective August 26.

The appointment of Forrest D. McCrea as field assistant in the barberry eradication campaign in Indiana was terminated August 31.

Klare S. Markley, laboratory assistant in the Office of Plant-Physiology and Fermentation Investigations, was transferred to the Office of Cereal Investigations on August 16. He will investigate protein changes which occur during the germination of cereal seeds.

The appointment of Raymond E. Menifee, field assistant in the barberry eradication campaign in Indiana, was terminated August 31.

George A. Mitchell has been appointed unskilled laborer at the Sherman County Branch Station, Moro, Oregon, effective August 20.

Harris Moak has been appointed unskilled laborer at the Biggs Rice Station, Biggs, Calif., effective August 20, for a period of 3 months.

Karl S. Quisenberry, agent in stem-rust investigations in cooperation with the Kansas Agricultural Experiment Station, resigned August 31 to accept a position at the West Virginia Agricultural Experiment Station.

Dr. Wilfred W. Robbins, formerly botanist of the Colorado Agricultural College and Experiment Station and during the past two years pathologist for the Great Western Sugar Company at Longmont, Colo., has been appointed botanist, effective September 1. Dr. Robbins will investigate methods of eradicating barberry bushes where they occur in large numbers in rocky or wooded areas where digging is impracticable. He will also study methods for the control of the growth of barberry seedlings and sprouts where old bushes have been removed.

John F. Ross, formerly superintendent of the Amarillo Cereal Field Station, Amarillo, Texas, writes under date of August 28 that he has inspected more than 1,500 cars of wheat on the Amarillo market since July 1 and that he has been very busy as grain inspector since his resignation from the Office of Cereal Investigations in July, 1920.

Jerome P. Seaton, who has been assisting Dr. C. E. Leighty in wheat investigations at Arlington Farm during the summer, resigned August 31 to continue his studies at Purdue University.

T. R. Stanton returned to Washington August 29 from Aberdeen, Idaho, where he has been for the past several weeks in connection with oat investigations on the Aberdeen Substation. He visited the experiment stations at Hays and Manhattan, Kans., enroute.

Leo R. Tehon, field assistant in charge of barberry eradication campaign in Illinois, is now botanist for the Illinois State Department of Agriculture. His connection with the barberry eradication campaign will be continued under appointment as agent.

John C. West, field assistant in the barberry eradication campaign in Minnesota, resigned August 2.

A farewell dinner was given to Dr. Wm. H. Weston, jr. at the Cosmos Club August 29 by his technical associates in the Office of Cereal Investigations and a number of others in the Bureau of Plant Industry who have been especially interested in his investigations. Dr. Weston will leave soon to become assistant professor of cryptogamic botany at Harvard University.

Daniel E. Willard, field assistant in the stem-rust investigations of wheat in cooperation with the Minnesota Agricultural Experiment Station, resigned August 15.

Allen P. Willis, who has been assisting Dr. C. E. Leighty in wheat investigations at Arlington Farm during the summer, resigned August 31 to continue his studies at Swarthmore College.

VISITORS

E. S. Haskell, formerly of the Office of Farm Management and Rural Economics of this Department and who has been engaged in agricultural development in Ecuador during the past year, was an office visitor on August 30.

Dr. Kingo Miyabe, Professor of Plant Pathology, College of Agriculture, and Director of the Botanical Garden, Hokkaido Imperial University, Sapporo, Japan, who came to this country as a guest of the American Phytopathological Society to attend its summer field meetings at St.Paul, Minn., and Fargo, N. Dak., arrived in Washington on August 25 to confer with the various plant pathologists of the Bureau. He left Washington August 31 for St.Louis where he will visit the Missouri Botanical Garden, and from there he will go to California by way of the Santa Fe, visiting the Grand Canyon enroute. From San Francisco, he will return to Japan.

PUBLICATIONS

A paper entitled "The Relation of Crop-Plant Botany to Human Welfare," which was presented by Dr. Carleton R. Ball before the joint session of Section G, A.A.A.S., the Botanical Society of America, and the American Phytopathological Society at Chicago December 29, 1920, was published in the American Journal of Botany, July 21, vol. 8, No. 7, p. 323-338.

Galley proof of Department Circular 194, entitled "Kanred Wheat," by J. Allen Clark and S. C. Salmon, was read August 25.

Galley proof of Department Circular 193, entitled "Fulghum Oats," by T. R. Stanton, was read August 23.

The paper entitled "Two Sclerotium Diseases of Rice," by W. H. Tisdale, was printed in the August 1 issue of the Journal of Agricultural Research, vol. 21, no. 9, p. 649-657, pl. 122-126.

SPECIAL NOTICE

The following notice is inserted on suggestion of Dr. W. A. Orton, acting chairman of the Federal Horticultural Board. All who have opportunity to examine packing materials from foreign countries are requested to make such examination and to forward any straw that appears to be diseased to Dr. H. B. Humphrey.

"For a considerable time it has been realized that new cereal diseases might be introduced into this country on straw used as packing around various kinds of imported materials. To accumulate definite data bearing on this, it is desired that all who have opportunity to inspect materials of this sort keep this matter in mind. If any suspicious straw of any kind is found in connection with imported goods, samples should be sent to the Office of Cereal Investigations. Any such suspicious samples should, of course, be carefully and tightly wrapped before mailing. With each such sample should be given as specific information as possible, especially as to the source from which the material came. It will be helpful also if those who find material of this sort will send information as to the disposition which is commonly made of such packing material."

PROJECT REPORTS

218 A. INVESTIGATIONS OF IMPERFECT AND SAC FUNGI

(Dr. A. G. Johnson, Pathologist in Charge)

CORN ROOT AND STALK ROTS

Purdue University Agricultural Experiment Station, La Fayette, Ind. (G. N. Meffer). The investigations of the root and stalk rots of corn at La Fayette, Ind., and vicinity, have been very successful during the past summer. The season has been unusually favorable for the growth of corn and the plat experiments are well advanced.

Mr. John Trost spent the week of August 22 to 27 at Wanatah recording final data on the inbred strains and bulk plantings of Early Yellow Dent. On August 26, Farmers' Field Day, over 100 farmers, county agents, and prominent corn breeders and growers of the northern counties in the State inspected the breeding plats at Wanatah, and were much interested in the results. The fact that some strains are unusually susceptible to the root rots was well demonstrated. Further, the fertilizer experiments which are being conducted at Wanatah by the Soils Department of the Experiment Station demonstrated that the root rots are more prevalent and serious

on the soils with the greatest mineral deficiencies. Mr. Trost is at present at Shelbyville completing the taking of data on the breeding, fertilizer, and inoculation plats. At the two places over 800 selfs have been obtained.

Mr. B. H. Puddleston is devoting all of his time to the experimental work at Battleground, Ind. In the two plats at Battleground over 1,100 selfed-ear rows have been planned, and this work has been continued by obtaining over 3,000 additional selfs this year. The original selfed ears were obtained in 1920 from 30 different strains of Reid Yellow Dent Corn.

Mr. Glenn M. Smith has completed the harvesting of the sweet corn fertilizer plats at Gibson City, Ill. The corn was used for canning and the experiments were conducted in cooperation with the Gibson Canning Co. and the Bureau of Raw Products Research of the National Canners Association. Special studies are being made of any relation between the formation of "black" in the cans and the fertilizer treatments which the corn received in the field. Mr. Smith is at present engaged in taking final data on the plants used for breeding. Approximately 2,500 ears have been selfed in the Stowell Evergreen and Country Gentlemen varieties. These are the chief commercial sweet-corn varieties used for canning.

Messrs. Robling and Aitkenhead are making analytical studies of various types of corn plants. Over 600 determinations have been made to date.

The physiological studies in the field are about completed. The plants are all well advanced toward maturity and are not satisfactory for further work.

Dr. C. R. Ball visited the Station on August 16 and 17. Inspections of the experiments were made and conferences held to discuss future investigations.

Dr. W. H. Tisdale and Merle T. Jenkins visited the laboratory August 22.

INVESTIGATIONS OF TAKE-ALL

(H. H. McKinney)

Winter Wheat Varieties Susceptible and Resistant to So-called Take-All

During the present crop season 130 varieties and selections of wheat were grown on infested land to determine relative susceptibility to the so-called take-all disease. These experiments were conducted near Granite City, Ill., by the Office of Cereal Investigations, United States Department of Agriculture, in cooperation with the Illinois Agricultural Experiment Station. The susceptible varieties are shown in Table 1, and the more commonly grown ones that showed marked resistance are listed in the paragraph which follows. None of the latter showed any infection with the so-called take-all. These results, ingeneral, agree with those obtained in 1920, particularly in that Harvest Queen (the white-chaffed Red Cross, locally known as Salzer's Prizetaker) was found to be highly susceptible, and Red Wave, Early May, and a strain of Turkey highly resistant. Illini Chief was considerably more heavily infected in 1920 than in 1921.

Table 1. Percentage of disease on susceptible winter wheat varieties grown in infested soil to determine relative susceptibility to so-called take-all at Granite City, Ill., in 1921.

Variety	Seed Source	Percentage of Disea
Harvest Queen (Red Cross (white-chaffed), Salzer's Prizetaker)	Illinois Station	95
Selection No. 13462 (bearded, red-chaffed)	C. I. No. 4834	95
Harvest Queen	C. I. No. 4882	75
Niagara (Sel. No. 13535	C. I. No. 5307	70
Velvet Chaff (Penquite)	C. I. No. 3540	65
Missouri Bluestem	C. I. No. 1912	60
Dawson (Dawson's Golden Chaff)	Ill. 9-225	1-
do	C. I. No. 6161	1-
Illini Chief	Illinois Station	1-
do	C. I. No. 5406	Trace
Budapest	C. I. No. 5789	Trace
Turkey (Wis. No. 18)	Illinois Station	Trace
World's Champion	do	Trace

The following varieties from the sources indicated showed no infection:

Beloglina, Illinois Station and C. I. No. 5964
Crimean, C. I. No. 5831
Currell, C. I. Nos. 2906, 3326, 4802
Dietz Longberry, C. I. Nos. 1981 and 3387
Early May (Local)
Fulcaster, C. I. Nos. 3013, 3407, 4862
Fultz, C. I. Nos. 1923, 3349, 3423, 3594, 3598
Gipsy, Illinois Station and Nos. 3439 and 3440
Gladden, Illinois Station and 5644
Gold Coin (Junior No. 6), C.I.
Grandprize, C. I. No. 5627
Harvest Queen (white-chaffed Red Cross, Salzer's Prizetaker), Resistant selection
Harvest King, C. I. No. 5647
Hungarian, Illinois Station

Indiana Swamp, Illinois Station
Jessie [illegible], C. I. Nos. [illegible] and [illegible]
K[illegible], Illinois Station and C. I. No. 5146
K[illegible], C. I. No. [illegible]
L[illegible], C. I. No. [illegible]
M[illegible], C. I. No. [illegible] and Illinois Station No. 5-460
Mammoth Red, C. I. No. [illegible]
Mellowmarrow, C. I. No. [illegible] and Illinois Station
Michigan Amber, C. I. No. [illegible]
Minnesota Reliable, Illinois Station
N[illegible], C. I. No. [illegible]
Pennsylvania, Illinois Station
Poole, C. I. No. [illegible]
Portage, C. I. No. 5370
Prince of Indiana, C. I. No. 3492
Red Cross (Red-Chaffed), C. I. No. 5318
Red Rock, Illinois Station
Red Wave, C. I. No. [illegible] and Illinois Station
Reliable, C. I. No. 3508
Ruby, C. I. No. [illegible]
Stoner (Marvelous), C. I. Nos. [illegible] and 5961
Sunset (Redcheeks), C. I. No. 5344
Tremonell, C. I. No. 3657
Turkey, Illinois Station, Nos. -514, 10-110, 12-41, and 509, and C. I. No. [illegible]
Turley (Tha. Ref. No. 2), Illinois Station
Turley (Iowa No. [illegible]), C. I. No. 5580
Wheedling, C. I. No. 4846

C E R E A L C O U R I E R

Official Messenger of the Office of Cereal Investigations
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 Sept. 10, 1921 No. 22
Personnel (Sept. 1-10) and Field Station (Aug. 16-31) Issue.

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PERSONNEL ITEMS

Charles E. Chambliss left Washington September 7 for Crowley, La., where he will spend 10 days to two weeks in a study of the rice experiments on the Crowley Rice Station, after which he will inspect cooperative experiments with upland rice in the southeastern States.

Henry S. Conard has resigned as field assistant in the barberry eradication campaign in Iowa, effective August 26, to resume his duties as professor of botany in Grinnell College.

George L. Fick, field assistant in the barberry eradication campaign in Michigan, resigned August 3.

Dr. H. B. Humphrey returned to Washington September 1 from a 7-weeks trip of inspection of cooperative cereal disease investigations, during which he conferred with the various specialists engaged in research problems and collected cereal disease material. In the corn belt he had an unusual opportunity to inspect the various field investigations of corn smut and the root and stalk rots of corn.

Dr. Annie May Hurd, assistant pathologist, returned to Washington September 8. During her absence she attended the Cereal Disease Conference at Minneapolis, Minn., and Fargo, N. Dak., and studied the root and stalk rots of corn at Urbana, Ill., and LaFayette, Ind. At the latter place she gave particular attention to the study of the physiologic disease symptoms in corn in the station plats, and made some hydrogen-ion determinations of the sap of normal and of diseased corn plants.

Dr. A. G. Johnson left Washington September 2 for Madison, Wis., after a six weeks stay here in charge of cereal disease investigations during the absence of Dr. H. B. Humphrey.

Mrs. Maye E. Joice has been appointed stenographer-typewriter in connection with the barberry eradication campaign at Columbus, Ohio, effective August 22.

Leo J. Klotz, field assistant in the barberry eradication campaign in Michigan, resigned August 31 to enter Washington University.

W. F. Kumlein, extension director in South Dakota, has been appointed collaborator in connection with the barberry eradication campaign in that State, effective September 1.

Fred D. Richey returned to Washington September 2 from a field trip in New England, Canada, and New York. During the trip he inspected the extensive corn experiments being conducted by Mr. T. B. Macaulay on his country place near Montreal, where Mr. Macaulay is growing several hundred lots of early corn collected by him. Many of these lots were obtained by Mr. Macaulay from Indians in Canada who have been growing them for many years.

The appointment of Leon G. Samsel as field assistant in the barberry eradication campaign in Nebraska was terminated September 9.

Robert E. Sylvester, laborer in connection with flax investigations on the Northern Great Plains Field Station, Mandan, N. Dak., resigned August 27.

Dr. W. H. Tisdale, pathologist in charge of cereal smut investigations, returned to Washington September 2 from a 2-months trip to the Mississippi Valley and Pacific Coast States. On this trip Dr. Tisdale consulted with numerous pathologists and cooperative employees with regard to the smut investigations which are being conducted, made inoculations of smut on corn at Bloomington, Ill., in connection with the study of varietal susceptibility and the relation of smut to root rot and other diseases, and arranged plans for cooperative experiments on flag smut. He attended the cereal disease conference at Minneapolis, Minn., and Fargo, N.Dak., and the meeting of the Pacific Coast division of the American Phytopathologic Society at Berkeley, Cal.

The appointment of Frederick F. Weinard as field assistant in the barberry eradication campaign in Nebraska was terminated September 9.

VISITORS

Bert Ball, secretary of the Spring Wheat Crop Improvement Association, with headquarters at Minneapolis, Minn., was an office visitor September 2.

F. F. Blaine, formerly assistant pathologist in smut investigations and more recently engaged in investigations of potato wart under appointment from the Plant Disease Survey, was an office visitor September 1.

Prof. D. F. Jones, plant breeder at the Connecticut Agricultural Experiment Station, was in Washington September 6, when he inspected the corn experiments which are being conducted on Arlington Farm. Professor Jones left Washington the night of September 6 on a field trip for the Office of Cereal Investigations, during which he will study corn experiments which are being conducted in the principal corn belt States.

Senor Carlos Vallejo, agricultural attaché to the Argentine Embassy, was an office visitor September 6 for the purpose of obtaining information as to where supplies of the leading varieties of cereals may be obtained for experimental introduction into Argentina.

PUBLICATIONS

Copies have been received of a paper entitled "The Value of Research on Grain Crops," being the text of an address by Dr. Carleton R. Ball before the Missouri Corn Growers' Association at Columbia, Mo., in February, 1921. This was published as a Monthly Bulletin of the Missouri State Board of Agriculture, vol. 19, no. 3, March, 1921.

Galley proof of the Journal of Agricultural Research paper entitled "Aecial Stage of the Orange Leaf Rust of Wheat *Puccinia triticina* Eriks.," by Drs. H. S. Jackson and E. B. Mains, was received August 30.

Galley proof of Farmers' Bulletin 1224, "Wheat Scab and Its Control," by Drs. Aaron G. Johnson and James G. Dickson, was read August 29.

Page proof of Department Circular 193, "Fulghum Oats," by T. R. Stanton, was read September 9.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens, and Substations (R. R. Childs). No Report.

SOUTH CAROLINA

Pee Dee Substation, Florence (Hugo Stoneberg). No report.

VIRGINIA

Arlington Farm, Rosslyn, (J. W. Taylor). No report.

NEW YORK

Cornell University Experiment Station, Ithaca (H. H. Love). No report.

Rhinebeck (Corn Investigations, L. S. Mayer). No report.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Crowley Rice Station, Crowley (J. Mitchell Jenkins). (August 15) During the past few days, we have had the following foreign visitors: Mr. Phillip Young from Hang Chow, China, and Mr. J. V. de Oliveira of Rio de Janeiro, Brazil. Mr. Oliveira has taken special work in farm machinery at the Iowa State College of Agriculture, and has, for some time, been working with the International Harvester Company. He is now studying the machinery used in the rice industry of this section.

Mr. W. D. Smith of the Bureau of Markets and Crop Estimates was here yesterday for the purpose of obtaining samples of rice at different stages of maturity, for use in making a study of the moisture content.

The work on the station is progressing very nicely. Many rices in the nursery and also in the tenth-acre plots are heading. The rainfall for the month of July was rather light, being slightly over 4 inches, and so far in August it has not been as heavy as usual. However, there is no danger of salt water, and the dry weather has enabled us to cultivate the non-irrigated crops. The soybeans are looking well, but we have been greatly annoyed by blister beetles, which seem determined to destroy the beans. We have at last about gotten them under control, and I am in hopes that no new broods will come out.

The Porto Rican rices are very promising. Some of these varieties are beginning to head.

Last week, I went as far as seven miles south of Lake Charles, and noted along the way that the acreage in rice was greatly reduced, many farms apparently being idle. The rice crop does not look particularly well. Many fields are badly infested with red rice and other weeds.

(August 31). Rice is maturing very rapidly in both the nursery and increase plats. Some of the earlier varieties will be harvested early next week. For some reason, the period of growth seems to be much shorter this season than usual. This is evidently due to the very uniform temperature that has obtained during the season.

The month of August was exceptionally dry. A total precipitation of slightly over 3 inches was recorded, practically 2 inches of which fell on one date. The temperature was higher for August than it was for the same month during the past two years. The maximum recorded was 98 degrees.

During the past week, we have had the following visitors: Mr. L. U. Ludolf, Rio de Janeiro, and Mr. M. S. Pontual, Frecheiras, Pernambuco, Brazil; and Mr. T. C. Chang, Shanghai, and Mr. C. C. Feng, Kaingsu, China. The professor of agriculture of the Southwestern Industrial Institute, LaFayette, La., brought over ten disabled soldier students last Monday to inspect the station. They spent the afternoon and seemed much interested in what they saw.

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler). Weather conditions during the latter half of August have been quite favorable for growing crops. Rainfall has been fairly abundant over the State in general and the moisture in the soil is sufficient for present needs. The corn crop is made practically all over the State, although a small percentage in the south central counties and on the southern Ozark slope was damaged by the early summer drought. The crop over the remainder of the State is in very good to excellent condition. Corn is denting, and is being cut for silage in the southern part of the State.

Much of our breeding corn on the station field was damaged by the dry conditions of early summer, as a great deal of it is inbred material of low vigor. We will obtain seed from a very large number of pollinations, however, and consider that we have had a satisfactory year in this work. We are now harvesting corn of the earlier types. Some of our later corn is still to be pollinated.

The yields in bushels per acre of six varieties of oats seeded on four successive dates at two-weeks intervals last spring were as follows:

Variety	Date of Seeding			
	Mar. 17	Mar. 31	Apr. 14	Apr. 28
Kherson	37.2	37.0	30.0	13.4
Iowa No. 105	37.5	37.7	27.2	11.9
Silvermine	40.2	32.6	20.3	11.1
Fulghum	55.3	42.5	31.4	6.3
Red Rustproof	14.8	12.5	10.9	3.2
Swedish Select	16.4	14.4	17.3	6.0

The difference in the effect of late seeding on different varieties is marked. Thus a delay of two weeks (March 17-31) in sowing Kherson and Iowa No. 105 oats did not affect their yields, while the same delay reduced the yields of Silvermine and Fulghum very materially. This relation has a possible bearing on the interpretation of varietal tests of oats in this region where very early sowing is highly desirable, but where experiment stations must generally delay sowing beyond the most favorable time in order to put the soil into suitable condition for experimental purposes. Red Rustproof and Swedish Select, which are late maturing varieties, were unable to make a fair yield even with the earliest seeding used in this experiment.

IOWA

Iowa State College, Ames (Barberry Eradication, R. H. Porter). No report.

Agricultural Experiment Station, Ames (L. C. Burnett). No report.

ILLINOIS

State Entomology Building, Urbana (Barberry Eradication, L. F. Tehon). No report.

Cooperative Corn Rot Investigations, Bloomington (J. R. Holbert) (Sept. 3) The unusually heavy rainfall during the month of August has delayed farm work generally, particularly the thrashing of wheat and oats, much of which will be of poor quality.

The corn crop is badly infested with ear worms. This infestation, combined with the weather conditions favorable to the growth of fungi, will probably result in a large amount of rotten and partly rotten ears. In some sections the selection of suitable seed corn for next season's planting may prove to be a real problem.

Some of the rain was accompanied by wind storms which blew the corn down badly.

Among the visitors during the past month were: Drs. Ball, Humphrey, and Tisdale, Office of Cereal Investigations; Drs. Burlison, Hottis, and De Turk, University of Illinois; Prof. Kinney of Kentucky; Prof. Etheridge of Missouri; Profs. Call and Zahnley of Kansas; Prof. Kime of Nebraska; and Messrs. H. Howard Biggar and C. V. Gregory, who represent farm papers.

INDIANA

Purdue University Agricultural Experiment Station

Corn Root, Stalk, and Ear Rots (G. N. Hoffer). No report

Leaf Rust Investigations (H.S.Jackson and E.B.Mains). No report.

Purdue University College of Agriculture (Barberry Eradication, R. J. Hosmer). No report.

OHIO

College of Agriculture of Ohio State University, Columbus (Barberry Eradication, John W. Baringer). Territory equivalent to two and three-fourths counties was covered in August by a farm-to-farm survey. The whole of Auglaize County and portions of Shelby, Henry, Fulton, and Lucas counties were included in the August rural work. In addition, two days were spent in checking barberry removals in Dayton and vicinity. Two thousand seedlings and sprouts were also removed from an escaped area in Preble County.

After the rural survey had been completed in Shelby and Auglaize counties, the force was transferred to the northern part of the State. It is now assured that at the close of this season's work a wide strip of contiguous rural territory will have been surveyed along the Michigan-Ohio line, as well as along the Indiana-Ohio line. With favorable weather in the spring of 1922, Putnam and Allen counties can be completely covered prior to July 1. This will offer protection to 80 per cent of the Indiana-Ohio line, eastward to a depth of about 60 miles. Seventy per cent of the Michigan-Ohio line will be protected to the south for a depth of nearly 200 miles.

Recently an escaped lot of barberries was found about one mile north of Sidney. Fifty years ago, or more, a nursery man put out a collection of trees and shrubs on the top of a big hill. Common green and purple-leaf barberries were among the selection of shrubs. The nurseryman who did the planting is dead and his barberry patch has been neglected. Escaped barberries in large numbers is the natural result. Some have been found at distances of a mile, in opposite directions, from the original planting. This is one of the few instances noted in Ohio in which purple barberries have escaped from cultivation. Local people have volunteered information that about thirty-five years ago a farmer living near the nurseryman became the laughing stock of the neighborhood when he attempted to control black stem rust by destroying the escaped barberries on his farm. Of course, the farmer's efforts were judged unsuccessful in controlling the rust, for there were hundreds of barberries growing on adjacent farms over which he had no control.

Kerosene was applied in various quantities, to large bushes of approximate uniform size, in order to learn whether they could be destroyed economically by this means. The kerosene was applied with a sprinkling can. An attempt was made to encircle the bark of each stem completely with the kerosene. Observations of results will be made next spring.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy) No report.

WISCONSIN

Agricultural Experiment Station, Madison, (J. G. Dickson). No report.

Department of Agriculture, State Capitol, Madison, (Barberry Eradication, Noel F. Thompson). No report.

MINNESOTA

College of Agriculture, University Farm, St.Paul (Barberry Eradication, Leonard W. Melander). No report.

Agricultural Experiment Station, University Farm, St.Paul (Stem Rust Investigations, E. C. Stakman). No report.

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger). (Sept. 1). No rain fell during the last half of August and, at present, a good rain would be useful. The earlier seeded plats in the date-of-seeding experiments were harvested during the latter part of August. Nine plats of sorghums in the varietal experiment were harvested August 23 and 25 and eleven plats of broomcorn in the varietal experiment were pulled August 25. The broomcorn looks as if it would make rather high yields of brush this season, though several of the plats have quite a percentage of crooked brush. During early September, most of the grain sorghums will be ready to harvest and practically all of the broomcorn will be harvested, as the dry weather is ripening the crops rapidly.

From present indications, yields of sorghums and broomcorn will be as high or higher than last season.

Mr. Barnes of Colby, Kans., was a station visitor August 28. Mr. W. M. Osborn, Superintendent of the Lawton Field Station, Lawton, Okla., visited the station August 31 and September 1.

Maximum temperature for the last half of August was 101° on August 27 and 28, minimum 62°, on August 31. No precipitation occurred during the last half of August.

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker). (Sept. 3) During the first week in August there were general rains in the eastern third of the State, but the central counties remained rather dry. Rains continued during the second week in the eastern counties, but the western half of the State was short of moisture and corn was injured. Ground was in good condition for plowing in the eastern part except for an unusually heavy growth of weeds, but was becoming dry in the western part. During the third week, the highest temperatures of the summer occurred, accompanied by hot winds. Wheat seeding began in the extreme northwestern counties and some alfalfa was seeded in the eastern section. During the fourth week temperatures of 100 degrees and higher occurred in many parts of the State with a maximum of 111 degrees at Salina.

At Manhattan, the maximum temperature was 104° on the 26th and the minimum 53° on the 8th. The mean maximum for the month was 90.3 degrees and the mean minimum, 63.7. Measurable precipitation fell on eight days, totaling 4.65 inches.

The following men visited the experiment station during August: Mr. T. R. Stanton, agronomist in oat investigations; Dr. W. H. Tisdale, pathologist in charge of cereal smut investigations; Dr. H. B. Humphrey, pathologist in charge of cereal disease investigations; Mr. R. C. Patton, botanist, Melbourne, Australia; Mr. A. H. Stensgaurd, agronomist for the general Agricultural Society of Stockholm, Sweden, and Mr. C. E. Carmony, instructor in farm crops, Michigan Agricultural College.

Prof. S. C. Salmon returned to Manhattan on September 1, having spent the month of August on vacation in South Dakota. Prof. L. E. Melchers returned to Manhattan on August 8, after a month's vacation in Ohio.

Mr. Parker spent August 25 to 27 at Hays and attended the annual sorghum day at Hays on the 25th. On Saturday he accompanied Mr. A. F. Swanson of the Hays Station on a trip to Stockton by automobile for the purpose of inspecting sorghum fields for pure seed and to study the sorghum breeding work of Mr. I. N. Farr.

The Kansas Experiment Station has just issued Circular No. 91 on "Kanota: An Early Oat for Kansas." This circular gives an account of the performance of Kansas Fulghum No. 5179, recently named Kanota.

Prof. Melchers and Mr. McKinney are planning some rather extensive experiments with the so-called take-all to be conducted at Abilene, Kans., in a badly infested wheat field. Mr. C. O. Johnston will commence work this fall on the new subproject on leaf rust investigations, giving special attention to testing the resistance of wheat varieties to the strains of leaf rust collected in Kansas. Hybrids will be made between Kanred and Harvest Queen for the purpose of developing a variety of soft red winter wheat resistant to leaf rust and adapted to eastern Kansas. Cooperative corn disease investigations being conducted by the Departments of Botany and Agronomy include ear-to-row plantings with diseased, disease-free, and check seed of Pride of Saline white dent, Commercial White, Reid Yellow Dent from Bloomington, and Midland Yellow Dent. In addition to the experiments at Manhattan, cooperative work along the same line is in progress at Marysville, Marshall Co., and at Columbus, Cherokee Co.

Nursery yields of barley in replicated rod rows were as follows:

Kansas No.	C. I. No.	Name	Bu. per acre
7131	261	Mariout	19.90
	690	Coast	19.37
7119		Ontario A.C. No. 21	15.80
7132	1455	Calif. Mariout	14.67
7125	576	Mansuri	14.17
8019		Mansuri	13.17
7117		Wis. Ped. No. 9	10.37
7017	182	Odessa	8.73

It will be noted that C. I. Mariout and Coast made the highest yields while California Mariout and the common six-row varieties made lower yields.

The nursery yields of oats in replicated rod rows were as follows:

Kansas No.	C. I. No.	Name	Bu. per acre
6094	1923	(Iowa) Burt	50.93
5244	887	Fulghum	47.67
5248		Burt	47.67
5218		Iowar	47.60
5213	1916	(Neb) Red Texas	47.33
5254		Burt	47.20
5247		Burt	46.53
5005	1913	Red Texas	44.53
6090	1921	(Iowa) Burt	44.40
5219		(Kansas) Burt	44.33
6052	1919	Burt	43.87
5220	293	Burt	41.93
5105-2		Red Algerian	41.53
5181	1912	Fulghum	41.33
5020	293	Burt	40.87
6004	1918	Burt	40.73
5208	729	Albion (Iowa 105)	40.67
5212	1924	Kherson (Neb. 21)	40.53
5034	1209	Kherson	40.07
5168	165	Kherson	39.27
6084	1925	Fulghum	39.13
5211	1917	(Neb.) Burt	38.47
5209	787	Richland (Iowa 103)	37.20
5148	459	Kherson	37.80
6076	1920	Burt	35.87
5179	839	(Kanota)Kansas Fulghum	34.93
(Cooperative experiment)		Red Texas	33.87
5206	831	Aurora	25.93
5245	1039	Ferguson No. 71	24.60

It will be noted that strains of Burt and Fulghum made the highest yields, although Iowar and certain strains of Red Texas also made good yields. Kansas Fulghum made an unusually low yield in the nursery this year. Aurora did not yield as well as in previous years and Ferguson No.71 proved to be too late for the conditions at Manhattan this season.

Following are the yields of Kanred, Clark Blackhull, and Turkey in various parts of the State, as reported by Mr. H. H. Lande, who is in charge of cooperative experiments with farmers, Kanred, 21.7 bu.; Fulcaster, 20.2 bu.; Harvest Queen, 19.9 bu.; and Blackhull, 19.8 bu., in northeast Kansas, average of 12 tests. Note that Kanred slightly outyielded the best variety of soft wheat.

In southeast Kansas, average of 14 tests, Blackhull, 20.7 bu.; Kanred, 20.6 bu.; Fulcaster, 19.6 bu.; Currell, 18.7 bu.; and Harvest Queen, 15.5 bu. Yields of Blackhull and Kanred were almost the same, both slightly exceeding that of Fulcaster.

In central Kansas, average of 27 tests, Kanred, 22.6 bu.; Blackhull, 21.7 bu.; Kharkof, 19.5 bu.; Turkey, 18.7 bu.; and P 706 (Improved Turkey), 18.3 bu. It will be noted that the yields of Kanred and Blackhull are almost identical. Yields of both these varieties exceed the yields of Turkey and Kharkof.

Following are the comparative yields and weight per bushel of Kanota (Kansas Fulghum) and other varieties of oats in different sections of the State, as determined in cooperative experiments. Yield, average of 16 tests, Kanota (Kansas Fulghum), 37.2 bu.; Bort, 32.7 bu.; Nebraska 21, 30.0 bu.; and Red Texas, 25.1 bu. In 21 tests, Kanota averaged 28.6 pounds per measured bushel, and the local variety, usually Red Rustproof (Red Texas), 23.7 pounds. It will be noted that the yields of Kanota are distinctly higher than those of Red Texas, the average difference being 12.1 bushels. In weight per bushel, Kanota leads Red Texas by 4.9 pounds, a distinct advantage.

Hays Branch Station, Hays (A. F. Swanson). The precipitation for the first half of the month was 3.19 inches, but during the last fifteen days it has been less than 0.5 inch. For the growing season the amount of rainfall is now a little more than 2 inches above the average, so that the season has been favorable for all crops.

The sorghums are ripening a little earlier this year than usual. All of the feterita, Freed sorgo, a part of the milos, and other early miscellaneous varieties are now in shock. The kafirs are a little later in maturing but will make a good crop.

During the month the writer has assisted Mr. Howard, the county agent, with cooperative sorghum tests. Pink kafir is popular with the farmers. Farmers in this vicinity seem to demand a sorghum with considerable forage.

August 25 was "Sorghum Day" at the station and from the standpoint of interest and enthusiasm was one of the best as far as the visitors were concerned. A number of county agents from the western end of the State were present. They were particularly anxious to become better informed as different types and the merits of the various varieties. Members of the boys' sorghum club took considerable interest in judging sorghums.

More sorghums are being grown this year than last, but there is a big need for more pure seed. Possibly 90 per cent of the fields seen throughout the country are badly mixed with various types of sorghums.

The writer spent several days at Manhattan and vicinity going over the experimental work and in becoming better informed as to the root rot disease of corn. Drs. Humphrey and Tisdale of the Office were at the station during the month and made a study of the disease here and also of the head and kernel smut in sorghums.

Other visitors to the station this month were Dean Farrell, Prof. Parker, and Mr. Bayles from the college, Supt. Chilcott of the Woodward (Okla.) station, and Mr. Keating from the Garden City station.

Effective September 1, Supt. Kent tendered his resignation to become president of the New Mexico Agricultural College. Mr. Kent was with the station sixteen months and made a host of friends during his stay here. Announcement has just been made of the appointment of L. C. Aicher, of the Aberdeen (Idaho) Substation, as superintendent, effective September 15.

COLORADO

Agricultural College, Fort Collins (Barberry Eradication, John R. Fitzsimmons). With the close of August, work is progressing rapidly with the farm-to-farm survey in northern Colorado. Boulder, Larimer, Weld, Adams, and Jefferson counties have been completed and as a result 16 new plantings of 62 bushes have been added to our lists. Of these findings, 14 have been removed, containing 59 bushes.

Black stem rust has been found quite generally distributed throughout the State, but not to such an extent as to cause heavy losses.

One team of two men has been taken from the field leaving the other to complete the few remaining counties that are to be surveyed and rechecked.

Akron Experiment Farm, Akron (F. A. Coffman). Weather conditions at Akron have been very favorable the past two weeks. Altho several light showers have fallen, at no time has it been impossible to do field work. During most of the period, the daily maximum temperatures have been high. This has tended to cause the corn and sorgos to ripen earlier than usual.

Fall work in this section is progressing very rapidly. Most of the farmers in this locality have already started to seed their fall grain. Thousands of acres of wheat will be sown in northeastern Colorado before September 1. Past experience has shown the farmers that the early sown winter wheat is the most productive as a rule in this section. The demand for farms in northeastern Colorado by renters seems to be much greater than ever before. One Akron realty dealer recently stated that he had at least 50 more applicants for farms than he had farms for rent.

Harvest of corn and sorgo crops in this section has already started. The extremely dry summer has lowered the yields of these crops to some extent, but much less than might be expected. Some fields of corn in the neighborhood of the station will probably yield close to 30 bushels to the acre, which is a very good yield under northeastern Colorado conditions.

Work on Akron Field Station has progressed very rapidly during August. In general, the station work is from a month to six weeks ahead of where it was last year at this date. About half of the area which will be sown to fall grains on the station this fall has already been sown. Thrashing of field plats has been finished for some time, and all of the winter nursery grain has been thrashed.

At present the station force is busy preparing the station display for the Washington County fair, which is to be held at Akron the latter part of the present week.

Average yields obtained in the regular varietal experiment with 13 varieties of winter wheat, grown in replicated fiftieth-acre plats, on fallow and corn land at the Akron Field Station in 1921 are as follows:

Variety	C. I. No.	Average yield per acre, bu.
Blackhull	6251	18.0
Crimean	1436	16.7
Alton Ghirka Winter	1458	15.4
Turkey	1571	15.3
Kharkov	1442	15.0
Kanred	5246	14.3
Kharkov	1583	13.0
Karmont	1583-30	11.1
Kharkov (Sel.6 p 4)	4207	10.0
Montana No. 36	5549	10.0
Buffum No. 17	3330	9.6
Alberta Red	5979	7.8
Minturki	6155	7.0

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel). No report.

WYOMING

Cheyenne Experiment Farm, Cheyenne (A. L. Nelson). No report.

College of Agriculture, University of Wyoming, Laramie (Barberry eradication, Ralph U. Cotter). No report.

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, H. C. Gilbert). During the month of August we surveyed four counties with a total area of 3,003 square miles. In this area 34 rural plantings, having a total of 1,550 bushes were found. Of these bushes, 1,008 were seedlings.

At Hot Springs, S. Dak., 257 young seedlings were found around an area where some large barberries had been destroyed two years previous. This finding was of interest because it was so located that birds might have carried the seeds out into the rocky hills and ravines nearby. Some of the hills were scouted and no seedlings were found; however, the region around the location of this old planting will have to be rescouted in a year or two. It would be a difficult task to eradicate the barberries should they become wild in any great numbers in the Black Hills.

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel) Dr. C. R. Ball, cerealist in charge, visited the station today. Considerable damage was done to grain in the shock by a rain of 2.34 inches which fell August 25. Many of the selections and varieties of flax in the wilt-test plats were harvested last week. Yield data on many of the varieties will be of little value owing to damage done by crickets. Many bolls were cut off the plants before harvest, while flax standing in the shock after harvest suffered even more damage from their ravages. In order to save the selections and other plantings of flax it was necessary to construct a large screen cage which crickets could not enter. Material from which seed was desired

was placed in this cage as soon as harvested. Fortunately, however, many of these pests have disappeared since the heavy rain of last week.

Considerable rust developed in flax during August. Apparently the dry weather during the early part of the season was not favorable to rust development. Most of the varieties and selections show some rust infection but some of the early maturing varieties matured with practically no rust.

State College of Agriculture, Agricultural College (Barberry Eradication, George C. Mayoue). Satisfactory progress was made in August even though the work was hindered to some extent by heavy rains which occurred in all the counties where the men were working.

A total of 481 bushes on four properties and 38 sprouts on six properties were found and destroyed in the original survey in the country. The 24 towns which were in the area covered by the farm-to-farm survey were scouted and no barberries were found.

The largest single find was 400 bushes on a farm near Cooperstown, Griggs Co., and the second largest find was 50 bushes on a farm near Carrington, Foster Co. All the bushes and sprouts found were moderately to lightly infected.

Every field of Marquis wheat which was observed in Griggs, Foster, and Eddy counties was badly damaged by black stem rust. The damage varied from 10 to 40 per cent. In the same area the durum wheats showed a damage of about 5 per cent due to black stem rust.

Exceptionally good cooperation was given to the field assistants working in Foster County by the county agent, Mr. Lake, and the editors of the different papers. We have had cooperation in our work in all the counties, but that given in Foster County was the best.

Besides doing the farm-to-farm survey, all the field men devote as much time as possible, especially when they are delayed by rain, to publicity work. This phase of the work is carried on through the newspapers, agricultural leaders in the county, and through mounted and live specimens of barberry which have been placed in towns. While driving through the country in the farm-to-farm survey, "Destroy the Common Barberry" posters and placards which the men have made up were tacked on sign boards, vacated buildings, school houses, and even on farm buildings by permission of the owner. In addition, bulletins are distributed to the farmers.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.) The last half of August has been extremely hot and dry. On ten days out of the 16 the maximum temperature was over 90° and on August 31 the temperature rose to 102°.

Harvesting the flax nurseries has continued as far as ripening will permit.

All of the wheat, oats, and barley plats that could be harvested have been thrashed, but yields have not yet been computed. Yields for individual plats of wheat range from 8 bushels per acre down to less than 1 bushel per acre.

The five flax varieties in the varietal plats which were cut with a binder and which we attempted to thrash proved not worth thrashing.

The Missouri Slope Fair took place August 29, 30, and 31. Exhibits of corn, small grains, fruit, and vegetables were exceptionally good in spite of the extremely dry season. Dr. H. L. Walster, in charge of the agronomy department at the North Dakota Agricultural College, judged the agricultural exhibits.

Among the visitors to the station during the latter part of August were: D. N. Borodin, member of the Russian section of the pageant "America's Making," Stewart Lockwood, e xtension entomologist in the Bureau of Entomology, R. L. Webster, North Dakota State Entomologist, and E. F. Chilcott, superintendent of the Woodward (Okla.) Field Station. Dr. C. R. Ball visited the station August 31, and Mr. J. H. Martin arrived the same day to attend to the sowing of a winter wheat nursery.

Maximum temperature for the last half of August was 102°, recorded September 1; minimum 43°, recorded August 19; precipitation, 0.23 inch. Precipitation recorded for the entire month of August was only 0.25 inch.

Dickinson Substation, Dickinson (Ralph W. Smith).(August 31). Several good rains have occurred during the past two weeks, totaling nearly 3 inches, which is practically all the rain we have had this month. While these rains occurred too late to benefit the cereal crops this year, they will be a help to fall plowing and seeding.

Thrashing is now in progress in this locality. Yields are light in this vicinity and to the southward but further north good yields are reported. Thrashing at the Substation was completed yesterday when the last of the nursery was thrashed.

The month of August has been quite warm, although not so hot as June and July. The temperature today is 96 degrees, which is the highest temperature for the month.

Varietal plats of winter wheat and rye were sown last week and the nursery seeding is expected to be done next week.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May). We are in the midst of an extremely busy season. Thrashing of some of the commercial fields to clear the ground for stubbling in fall wheat is now in progress. Thrashing of the commercial fields of Kharkov and harvesting of the Peliss spring wheat overlapped by a week or more this year. Harvesting was completed the latter part of last week (August 26).

Some fall wheat will probably be sown this week, including all of the plat tests under the cereal project. It is not probable that any of the winter wheat nursery will be sown before September 5 or 6. The present winter wheat nursery may not be thrashed by that time, which will delay that portion of the nursery. Many new hybrids will be added to the nursery tests this fall and these may be seeded earlier. Mr. J. H. Martin of the cereal office is expected here during the first week of September to help seed the extensive winter wheat nursery.

We have had over an inch of precipitation during August but there is not sufficient soil moisture to germinate wheat to the best advantage. A few farmers in this district seeded their fall wheat about two weeks ago.

State College of Agriculture, Bozeman (Barberry Eradication, H. E. Morris). No report.

IDAHO

Aberdeen Substation, Aberdeen (L. C. Aicher). No report.

OREGON

Sherman County Branch Station, Moro (D. E. Stephens). No report

CALIFORNIA

Rice Field Station, Biggs (J. W. Jones). The weather during August has been comparatively cool. However, most of the rices at the station are heading, and a few of the earliest varieties in the nursery are ripening. The maximum temperature for August was 104 degrees on the 5th; the minimum, 53 degrees on the 13th. Indications are, at present, that the harvest will be a few days earlier than in 1920.

Quite a large amount of the spring thrashed rice is being sold and milled the past ten days. The price paid ranges from 60 to 80 cents per hundred for the paddy.

On August 9, Director C. M. Haring and Profs. W. P. Kelley, C. F. Shaw, P. B. Kennedy, W. W. Mackie, W. W. Weir, Frank Adams, and S. H. Becket, all of the California Agricultural Experiment Station, visited the station. The following day I joined the party and we inspected the rice fields in Glenn and Colusa counties. We saw some good and some very poor fields of rice. Some fields where the water was held early to control water grass looked very good, while other fields grown in the usual way were extremely foul. The California station intends to start some work with rice in 1922.

Plant Introduction Station, Chico (V. H. Florell). No report.

Agricultural Experiment Station, Davis (F. N. Briggs). We have completed the harvesting of the cereal disease plats at this station. The data for the smut counts have not all been calculated but generally speaking the infection is considerably less than in 1919. The immune and highly resistant forms of last year continued to be free or practically free from smut again this year.

The tests with chemical dusts for bunt control gave very encouraging results. Copper carbonate dust was slightly more effective in controlling bunt than the standard bluestone and formaldehyde treatments. Copper carbonate dust did not cause any appreciable seed injury, while both bluestone and formaldehyde caused considerable injury.

Agricultural Experiment Station, Berkeley (W. W. Mackie). No report.

C E R E A L C O U R I E R

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 September 20, 1921 No. 23
Personnel (Sept. 11-20) and Field Station (Sept. 1-15) Issue.

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PERSONNEL ITEMS

Dr. C. R. Ball returned on September 16 from a trip of inspection of cooperative cereal investigations in the Mississippi Valley and Great Plains Areas. During the latter part of the trip, a special study was made at Chillicothe, Tex., and Woodward, Okla., with Dr. Shantz, of the sorghums obtained by the latter in Africa.

William R. Barger, field assistant in barberry eradication in Michigan, resigned on September 12 to accept a position in the Office of Horticultural and Pomological Investigations of this Bureau.

A. R. Childs, representative of this Office in cooperative cereal experiments in Georgia, is the author of Georgia Extension Division Bulletin No. 241, entitled, "Seed Selection on the Farm," issued in August. He also is joint author with F. C. Ward of Extension Bulletin No. 238, entitled, "Cotton Production and Boll Weevil Control," issued in June.

Sylvester S. Humphrey, field assistant in barberry eradication in Ohio, resigned on September 14 to resume his studies at Ohio State University.

James T. Jacques was appointed field assistant in barberry eradication in Wisconsin, effective September 12.

Mrs. Edith Seymour Jones has been reinstated effective September 22, to complete reports and manuscripts covering her experimental studies on oat smut, conducted in cooperation with the Wisconsin Agricultural Experiment Station.

Garret L. Jordan, field assistant in barberry eradication in Indiana, resigned August 31.

C. H. Kyle, agronomist in Corn Investigations, left Washington on September 18 to continue his corn breeding experiments at the Florence Substation, Florence, S. C.

Ernest A. Lungren, field assistant in barberry eradication in Colorado, resigned on September 10 to pursue post-graduate studies in plant pathology at the Colorado Agricultural College.

Ray J. Plaster, field assistant in barberry eradication in Indiana, has resigned effective September 15, the work for which he was appointed having been completed.

Albert E. Seitz, field assistant in barberry eradication in Ohio, resigned on September 3.

Dr. E. C. Stakman, in charge of Stem Rust Investigations, arrived in Washington September 17 for conference and will leave on September 21 to study barberry species and obtain material at the Arnold Arboretum, Harvard University.

Charles W. VanCleve, field assistant in barberry eradication in Minnesota, resigned on September 3.

C. W. Warburton will leave Washington on September 21 for Grand Forks, N. Dak., to supervise the collection of moneys due the Government from farmers who received seed loans last spring.

MANUSCRIPTS AND PUBLICATIONS

Page Proof of Department Circular No. 19-, entitled "Kanred Wheat," by J. Allen Clark and S. C. Salmon, was read on September 13.

Revised edition of Farmers' Bulletin No. 553, entitled "Popcorn for the Home," by C. P. Hartley and J. G. Willier, bearing the revision date of August, 1920, has just been received.

Page proof of Farmers' Bulletin No. 1224, entitled "Wheat Scab and Its Control," by Drs. Aaron G. Johnson and James G. Dickson, was read on September 20.

Kansas Agricultural Experiment Station Circular No. 91, entitled "Kanota: An Early Oat for Kansas," by S. C. Salmon and John H. Parker, was issued in August and contains the results of cooperative experiments in developing this valuable oat.

The paper entitled "The Production and Dispersal of Conidia in the Philippine Sclerosporas of Maize," by Dr. William H. Weston, Jr., submitted on August 3, has been approved for publication in the Journal of Agricultural Research.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens, and Substations (R. R. Childs). No report.

SOUTH CAROLINA

Pee Dee Substation, Florence (Hugo Stoneberg). (Sept. 15) Upon my return here September 12 from a month's trip to Washington, I find that our corn breeding plat has advanced very rapidly. It is now mature with the exception of the late Guatemala corn. The dry weather during August and so far in September will reduce the yield somewhat. Most of the selfed and outcrossed shoots have developed fairly good ears. I am now taking notes on shuck protection, height of ear and stalk, etc., before we actually begin harvesting next week.

The continued dry weather has practically killed all the rice selections adapted to non-irrigated conditions. Only one selection that was somewhat earlier than the others headed out.

The cotton crop has been reduced about 75 per cent due to the appearance of the boll-weevil for the first time in this section.

Professors Barre and Blackwell from Clemson College visited the Station on Tuesday, the 13th.

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor). (Sept. 16) Rain is badly needed in this locality. At present it is impossible to satisfactorily plow a section of ground and fit it for a seed bed on account of the manner in which the soil is packed from the continued dry spell.

On September 15 the first seeding in the cultural-rate-and-date-of-seeding experiment on winter wheat was made. The results on this experiment in the past two years have been very satisfactory.

The buckwheat plats were harvested September 16. Despite the hot weather, a fair yield from both the Japanese and Silverhull varieties is anticipated. The high humidity of the past few days makes the curing process an exceedingly slow one.

NEW YORK

Cornell University Experiment Station, Ithaca (H. H. Love). No report.

Rhinebeck (Corn Investigations, L. S. Mayer). No report.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Crowley Rice Station, Crowley (J. Mitchell Jenkins). No report.

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler). (Sept. 16) The condition of the Missouri corn crop on September 1 is stated by the state and federal cooperative crop estimate service as 66 per cent, forecasting a yield of 33.54 bushels per acre or 206,372,000 bushels on 6,153,000 acres. In the southern third of the State the prospects are not as good as those of last year, but in the remainder of the State they are somewhat better and the expected yield is the third highest of the last ten years.

The extremely heavy rainfall since early August is responsible for the improvement in the condition of corn, though these rains came too late in certain small sections in the neighborhood of St. Louis. Silo filling has begun. It is expected that 70 per cent of the corn will be cut for silage and 28 per cent for fodder.

The acreage seeded to wheat this year is expected to be about 5 per cent lower than last year. Some wheat has already been seeded and the bulk of the crop will be seeded in the second half of this month. The oat crop of last season, on the largest acreage ever seeded to oats in this State, thrashed out only 19 bushels per acre, the lowest yield since 1911. The quality of oats is also much below average. The weather during the first half of September was characterized by extremely heavy rainfall, continuing the heavy rains of August. During the last few days the weather has been very warm.

Dr. D. F. Jones of the Connecticut Station is with us today for a visit of two days. Mr. F. H. Steinmetz of the Minnesota Station visited us September 9 and 10.

IOWA

Iowa State College, Ames (Barberry Eradication, R. H. Porter). No report.

Agricultural Experiment Station, Ames (L. C. Burnett). No report.

ILLINOIS

State Entomology Building, Urbana (barberry eradication, L. R. Tehon). (Sept. 1) Barberry eradication in Illinois for the month of August included original survey in five counties (Cook, Dupage, Kane, Lake, and McHenry) with a total of 643 properties on which were growing 23,646 bushes.

Of the total number of bushes found, 5,966 were located in the city; 14,805 were escaped; and a total of 17,680 were located outside of cities and towns.

The total number of bushes eradicated during the month is 14,965.

It is interesting to notice that there are apparently more and larger plantings of escaped barberry in the neighborhood of Chicago than have yet been found elsewhere in Illinois. For example, near Chicago there is a single planting of 1,000 escaped bushes; near Lagrange, 5 plantings totaling 1000 bushes; near Melrose Park, a single planting of 200 bushes; near Huntley, in Kane County, 4 plantings with 229 bushes; near Lake Forest, in Lake County, 3 plantings totaling 11,000 bushes; and near Huntley, out in McHenry County, 5 plantings with 2,148 bushes - all escapes.

The month of August has seen the completion of the country survey in Lake County, Cook County, Dupage County, and about three-quarters of Kane County.

During the summer, chemical methods for killing barberry have been tried. In the case of about 45 bushes, common salt, applied in trenches near the base of the bushes, has given one hundred per cent kill. Fuel oil, testing 28° Beaumé, applied to the bases of about 50 bushes, has not shown any results after forty-five days.

A summary of the office and field work for the month is as follows:

Letters received	186
Letters written	249
Barberry post cards	1031
Farmers' Bulletin No. 1058	707
Separate No. 796, United States Department of Agriculture Year Book	119
Eradication posters sent out	50
Articles for newspapers and other publications	5
Demonstrations	9
Telegrams	48
State Inspection Act	285
State Barberry Regulation	154
Requests for information	1
Reports	2
Miles traveled by automobile	3771
Talks to individuals	911
Red tags used	3526

Funk Brothers Seed Company, Bloomington (Corn Root and Stalk Rot Investigations. J. R. Holbert). (Sept. 17) The final pre-harvest field notes are now being taken. We have approximately 2,500 individual plats this year, covering experiments with inoculated corn, naturally infected corn, and various ear characteristics that may be of value in selecting disease-free seed corn.

Among our visitors for the first half of September are: Doctors H. K. Hayes, D. F. Jones, W. L. Burlison, A. G. Johnson, J. G. Dickson, and Mr. J. F. Trost, and the advisory committee of the Agronomy Department, University of Illinois. In addition, a large number of farmers have looked over our experiments and many gave compliments on our disease-free corn which we have selected and are growing as checks in our experimental plats.

INDIANA

Purdue University Agricultural Experiment Station, Lafayette.

(Corn Root, Stalk, and Ear Rots. G. H. Coons). (Sept. 15). The experimental dent corn plats at Battleground and sweet corn plats at Lafayette, Ind., have been harvested by Messrs. Dudleston and Smith during the past two weeks. All of the selfed ears from these plats have been carefully selected and dried. Mr. John Trost took final growth data on the fertilizer plats at Linden, Ind., September 7, made selections of selfed ears, and harvested his selfed ears in the experimental plats at Wanatah, Ind., on September 12 to 15, inclusive.

Dr. Annie May Hurd inspected the experimental plats and visited the laboratory from September 2 to 6, inclusive, during which time certain physiological studies were conducted upon various types of corn plants.

Dr. H. K. Hayes of the University of Minnesota, and Dr. D. F. Jones of the Connecticut Agricultural Experiment Station, inspected the field experiments on September 8 and 9. A conference on corn breeding experiments was held at the Experiment Station on the evening of the 8th.

Mr. Axel H. Stensgard of Stockholm, Sweden, representing the General Agricultural Society of Sweden, visited the laboratory on September 10.

Mr. John A. Shipher, assistant manager of the National Lime Association, inspected the field experiments on September 14.

(Leaf Rust Investigations, H. S. Jackson and E. B. Mains). No report.

Purdue University College of Agriculture (Barberry Eradication, R. J. Hosmer). (Sept. 1) During the month of August, two counties, Huntington and Wabash, were completely surveyed and portions of two other counties were completed. In DeKalb County one area was located in which 350 escaped bushes were found scattered over 8 different farms covering an area approximately 2 miles square. This infestation could be traced directly to an old hedge located nearly in the center of this area but which had been removed a number of years ago. Wheat and rye in this vicinity had been severely rusted every year and in a great many cases the crops had been entirely ruined. The farmers living in this community gladly cooperated with our men in furnishing teams and labor, and this area was thoroughly cleaned up. In two cases bushes were found so large that teams could not remove them, so dynamite was resorted to with the desired results. With the completing of Whitley and St. Joseph Counties this fall, the entire northeastern portion of the State will be cleaned up, making a barberry-free area in which we should begin to see the results of our work next year.

OHIO

College of Agriculture of Ohio State University, Columbus (Barberry Eradication, John W. Baringer). No report.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy). No report.

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson). No report.

Department of Agriculture, State Capitol, Madison (Barberry Eradication, Noel F. Thompson). No report.

MINNESOTA

College of Agriculture, University Farm, St. Paul (Barberry Eradication, Leonard W. Melander). (Sept. 1) The month of August was one of the most successful months thus far this year. Fifteen counties were completed in the farm-to-farm survey, making a total of forty counties completed to date. At one time during the month, eighteen counties were being worked. This large number is accounted for by the fact that the State forces were working a full shift of nineteen men. The progress made in this State this year demonstrates that it is certainly a great help for a State to receive some state aid, as all of that money can go right into eradication, and no overhead expense for organization is necessary.

During the month, 276 bushes were found in fifteen plantings in the cities and towns surveyed, while 3,527 bushes were found on fifty-six properties in the country districts [illegible].

The Red River Valley has now been checked in the farm-to-farm survey. Rigid resurvey will be made there next year. With the aid of the State weed inspectors, we expect to keep a very close observation of all plantings in the counties thus far surveyed.

Barberry demonstrations were included in eleven of the county fairs during the month of August, while material was sent out to twenty-three other counties for use during September. September is the heaviest month for county fairs. Some time was spent preparing the Barberry Demonstration for the State Fair which is to be held September 3 to 10.

The height of the season's work is past, but work is still being continued in eight counties.

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman). No report.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger). (Sept. 16) The drought of the last part of August extended to the 7th of September, when a rain and wind storm of some violence visited this part of the country. The storm blew down most of the uncut sorghums on the Station, with the result that harvesting is rather slow and difficult. The rain did a lot of good, as it will enable the later dates and varieties of sorghums to fill well.

All of the broomcorn to be harvested for brush is pulled with the exception of the July 1 date-of-seeding. The kafir rate plats were harvested the day before the storm, as well as the milos and kafirs of the varietal experiment. Harvesting since the storm has been slow, and tangled bundles are the general rule. About thirty plats of sorghums are all that remain to harvest on the cereal project.

Yields of broomcorn and sorghums will be much above average.

On September 12, Dr. C. R. Ball and Dr. H. L. Shantz studied the sorghums grown from seed collected in Africa by Dr. Shantz. Dr. Ball also inspected the sorghums and broomcorn on the cereal project. Mr. H. M. Vinall of Forage Crop Investigations visited the Station for a short time on the 11th. Dr. Larsen of the Dairy Division visited the Station on the 14th.

Maximum temperature for the period was 98° on September 3, and the minimum was 55° on the 8th. Precipitation for the first half of September was 2.60 inches on the night of September 7.

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker). No report.

Hays Branch Station, Hays (A. F. Swanson). (Sept. 16) We are having dry and windy weather with a decided lack of rainfall the last thirty days. The

ground is dry, and while many farmers have seeded their wheat early, others are waiting for a good rain.

The experiments in rate- and date-of-seeding winter wheat were begun September 8 and will continue every week until November 1.

All of the sorghums have been harvested except the late maturing kafirs, Shrock sorgo, and Shallu. A nice collection of sorghum seed for next year's planting has been made with some promising new hybrids for further tests.

Between September 10 and 13 the writer had the privilege of making a 650-mile auto trip through Southwestern Kansas with members of the Agronomy Department of the college. The Garden City and Tribune experiment stations were visited. A trip was made to the farm of H. Willis Smith near Kismet, Kans. Mr. Smith has done considerable breeding work with sorghums for a number of years, and he has several promising crosses between red kafir and milo and some that are further crossed with feterita.

A large portion of Southwestern Kansas is a level plains area and until a few years ago was almost entirely a range country. Of late years an increased area of land is being cultivated to sorghums and corn. Wheat is also becoming a rather important crop in acreage, although the average yield is low. The ranchers are beginning to see the need of sorghums as a supplement to their pastures.

Dr. C. R. Ball, Cerealist in Charge, Prof. S. C. Salmon of the Kansas State Agricultural College, and Mr. H. N. Vinall of the Office of Forage-Crop Investigations were Station visitors recently.

COLORADO

Agricultural College, Fort Collins (Barberry Eradication, John R. Fitzsimmons). No report.

Akron Experiment Farm, Akron (F. A. Coffman). (Sept. 16) Beautiful autumn weather is being experienced at Akron at this time. A few cool days occurred during the early part of the month, but for the most part the weather has been mild and pleasant. One shower, heavy enough to germinate the winter wheat that had already been sown, was received during the first half of the month. All wheat sown prior to September 11 is emerging to a fine stand. Moisture conditions during the present week are very favorable, and wheat sown during the past week should be showing above the surface before the end of next week.

Corn cutting in this section is well under way. It is very likely that 75 per cent of the cutting of row crops in this immediate section has been completed. While, as a rule, row crops are lighter than last season, yet these crops are at least average. Some fields of corn in this neighborhood should average between 25 and 30 bushels.

The Washington County Fair, which was held August 31 and September 1 and 2, was a decided success. Large crowds were in attendance each day and more interest than usual was displayed by the farmers in better livestock and better crops. The fair dates were a little early for the best possible displays of farm products, but very creditable exhibits of most of the crops were on exhibition. Kanred won all of the first prizes for winter wheat. The pure-bred livestock displayed was a very pleasant surprise. There were probably 200 head, or more, exhibited in the various classes. Some very creditable animals

were shown. In this dry-land county, where grain farming has been the most important type of farming, the increased interest in pure-bred livestock bids well for the future of this section as an agricultural community.

Work on Akron Field Station has progressed favorably during the past half-month. With the exception of the later seedings in the rate-date experiment, all of the seeding with the drill has been completed on the cereal projects, and but a few hours' work has yet to be done by the Dry Land Agriculture Office. Nursery seeding is nearly 75 per cent completed. The winter nursery at Akron this season will be the largest in the history of the station, containing between 750 to 800 varieties and selections. Unless weather conditions prevent, it is very likely that the nursery seeding will be practically completed by September 20. All of the nursery grain that has been sown is emerging to very satisfactory stands.

Crops in the different corn and sorgo experiments are rapidly reaching maturity. Some very encouraging variations are to be seen in the different sorgo head selection rows. Some of these selections give some promise of proving the "long hoped for" early-maturing grain type of sorghum with considerable forage value, that this section is so badly in need. Up to the present time Manchu brown kaoliang, worthless as a forage, has been the only grain sorghum that was early enough in maturing to be grown in our experiments.

Weather conditions have been very favorable for the potato crop on the dry land sections of northeastern Colorado. It seems likely that a better crop than early prospects would have indicated will be obtained. The watermelon crop has also been very good, especially on Akron Field Station, as everyone on the Station can testify.

During the first half of September the Akron Field Station has enjoyed a number of visits by scientific workers. Doctor C. R. Ball, Cerealist of the Office, visited the Station on September 5. The day was spent in inspecting the different experiments and the problems of the work were discussed. On September 2, Professor A. E. McClymonds of the Agronomy Department, Professor Ufford of the Poultry Department, and Professor Fairbanks of the Animal husbandry Department of the Colorado Agricultural College visited the Station. Professor H. H. Laude of the Agronomy Department of the Kansas Agricultural College, and County Agent A. W. Gilkenson of Cheyenne County, Kansas, visited the Station on September 15.

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel). No report.

WYOMING

Cheyenne Experiment Farm, Cheyenne (A. L. Nelson). (Sept. 16) The weather continued dry and warm until the last few days, when temperatures close to freezing were recorded. The maximum temperature, 89 degrees, occurred September 1 and 2, and the minimum, 34 degrees, September 12. Two light showers have occurred with a total precipitation of .08 inch. The winter cereals seeded August 31 emerged very sparsely on September 10 on fallow land but have not made any appearance on stubble land. Experiments in seeding with the furrow drill which was secured by this Station show no advantage in this respect.

For the past two weeks the work at the Station has consisted of filling the silos. The corn and sunflower yields were light, due to dry weather. How-

ever, the sunflowers produced comparatively the larger yield. It is expected that thrashing will be resumed [illegible] the part of next week. The season is far more advanced than for some years past.

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, Ralph U. Cowan). No report.

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, H. C. Gilbert). No report.

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel). No report.

State College of Agriculture, Agricultural College (Barberry Eradication, George C. Mayoue). No report.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.). (Sept. 17) The first half of September has been generally cool and rainy. Of the nine days from September 7 to 15 only two, September 11 and 12, were without a record of precipitation.

Mr. J. H. Martin arrived September 1 to sow a winter wheat nursery consisting of 660 18-ft. rows. On September 1 and 2 we sowed the wheat at the rate of about 135 rows per hour with the Columbia drill.

On September 9 Mr. Dillman and I left by auto for Newell, S. Dak., where we arrived about 5 p.m. September 10.

All of the flax and small grains were already harvested. Flax on dry land was a complete failure. The maximum yield obtained from flax on irrigated land was 29.6 bu. per acre. The alfalfa seed crop on the irrigation project was a complete failure as a result of a high wind just as the seed was ready to harvest. The Paynes White Tent corn in the dry land rotation plots was not very productive, though the few ears set were large and well filled.

At the Substation at Hettinger, N. Dak., which we visited on our return trip, September 14, the drouth was evidently even much worse than at Mandan. All of the flax and small grain plots were mowed and could not be thrashed.

The cleaning of the grain from the wheat, oat, and barley varietal plots at Mandan is completed, and yields are as follows:

Wheat Varieties

Hard Federation	6.7	Kubanka No. 8	4.3
Pelliss	5.5	Kubanka C.I.1440	4.0
Preston	5.2	Marquis	3.4
Red Bobs	5.1	Acme	3.2
Ruby	4.9	Arnautka	3.3
Kubanka No. 98	4.7	Power	1.8
Monad	4.7	Haynes	0.8
Kota	4.4		

Oat Varieties		Barley Varieties	
Sixty Day	1.9	White Smyrna	7.7
Early Mountain)		Hannchen,) mowed	
Swedish Select)		Svanhals)	
Golden Rain)	Failed to head	Mariout	7.5
Victory)		Coast	2.9
White Russian)		Manchuria	0.6

All of the oat varieties except Sixty Day failed to head, and Hannchen and Svanhals barleys dried without setting a crop.

Maximum temperature for the first half of September was 95°, recorded September 2; minimum, 36°, recorded September 11; precipitation, 1.47 inches.

Dickinson Substation, Dickinson (Ralph W. Smith). (Sept. 15) During the past two weeks there has been much cool, cloudy weather with showers occurring almost daily. The total precipitation this month has been 1.90 inches. The surface soil is wet to the depth of 7 or 8 inches, making conditions good for the seeding of winter rye of which a large acreage is being sown in this State.

Thrashing operations in this locality have been suspended during the past 10 days due to the wet weather. Thrashing of cereal crops at the Substation was finished before the wet weather began.

Dr. C. R. Ball visited the Substation on September 1. Director P. F. Trowbridge of the State Experiment Station visited the Substation September 14 and 15.

During the first week of September, Mr. John H. Martin spent several days at the Substation seeding the winter-hardiness nursery consisting of about 1,400 rows. About 350 rows were 5-foot rows and the remainder, 18-foot rows. Seeding was done with a Columbia garden drill. The best speed in seeding noted was 160 eighteen-foot rows per hour with two persons working with one drill.

The yields obtained from the replicated plats of wheat, oats, and barley are given below.

Yields obtained from spring wheat grown in triplicated 32nd acre plats at the Dickinson Substation in 1921:

C.I.No.	Variety	Yield (bu. per acre)
	DURUM	
3320	Monad	7.3 ± 0.3
1584	Peliss (From Ft. Clark)	7.6
5284	Acme	7.5 ± 0.2
1440	Kubanka	7.1 ± 0.2
4064	Arnautka	7.0 ± 0.3
1440-117	Kubanka No. 117	6.8 ± 0.3
1440-132	Kubanka No. 132	6.8 ± 0.2
1584	Peliss	6.8 ± 0.5
5296	Minum	6.8 ± 0.6
4063	Kubanka No. 8	6.[illegible] ± 0.0

* Only one plat.

[illegible]	[illegible] No. 74	6.6 ± 0.1
1440-58	Kubanka No. 58	6.5 ± 0.1
6127	Golden Bell	6.1 ± 0.1
3332	Pentad (F-3)	6.2 ± 0.7
1440-58	Kubanka No. 58	6.1
5123	Kyle	5.9 ± 0.7
1440-65	Kubanka No. 65	5.6 *
1440	Kubanka (From Langdon)	4.6 *
	COMMON	
4900	Kitchener	5.9 ± 0.7
3641	[illegible]	5.6 ± 0.9
6047	Ruby	5.0 ± 0.4
6235	Red Boos	4.8 ± 0.2
3697	Power Fife	4.6 ± 0.2
3329	Red Fife	4.4 ± 0.3
3022	Rysting Fife	3.6 ± 0.3
4733	Hard Federation	3.0 ± 0.3
3081	Preston	5.9 ± 0.7
5878	Kota	4.2 ± 0.3
4377	Norka	4.1 ± 0.2
2874	Haynes Bluestem	2.8 ± 0.5

Winter wheat grown in duplicate 45th acre plats protected by standing cornstalks:

6135	Minturki	4.4 ± 0.6
1571	Turkey	3.4 ± 0.3
1543	Beloglina	3.3 ± 0.5
1583	Kharkof	2.3 ± 0.4
5146	Kanred	2.8 ± 0.4
5130	Buffum No. 17	2.6 ± 0.4
1583-30	Karmont	2.3 ± 0.6
5149	Minhardi	2.2 ± 0.2

Yields of oat varieties grown in triplicated 32nd acre plats on the Dickinson Substation in 1921:

459	Kherson	18.0 ± 1.0
841	Nebraska No. 21	18.0 ± 1.4
787	Richland	15.8 ± 1.5
847	Iowar	14.3 ± 1.3
165	Sixty Day	14.0 ± 1.2
658	Big Four	14.6 ± 2.0
738	Lincoln	12.8 ± 3.0
560	Victory	11.1 ± 1.1
659	Silvermine	11.1 ± 1.4
741	Siberian	10.6 ± 1.8
134	Swedish Select	10.6 ± 1.4
734-8	Early Mt. No. 8	9.6 ± 1.3
160	Banner	8.2 *
636	Early Mt. No. 2	8.1 ± 1.1
731	Abundance	4.6

* Only one plot.

493	Golden Rain	7.9 ± 2.5
551	White Russian	1.3 ± 0.6
1526	Yaroslav Emmer	10.2 ± 2.4*

Yields of barley varieties grown in triplicated 32nd acre plats at the Dickinson Substation in 1921:

	2-ROWED HULLED	
195	W. Smyrna (S.D. 28-7-15)	10.3 ± 0.6
658	W. Smyrna	9.8 ± 1.0
	Steigum	9.5 ± 0.9
	Scholey	8.6 ± 1.5
195	W. Smyrna (S.D. 28-14.15)	8.3 ± 0.4
	Princess	7.7 ± 0.7
205	Hanna	7.5 ± 1.0
	Heil-Hanna No. 4	7.2 ± 0.4
187	Swan Neck	5.9 ± 1.0
531	Hannchen	5.8 ± 0.8
	6-ROWED HULLED	
575-1	White Gatami	11.9 ± 0.9
182	Odessa	10.9 ± 0.6
932	Mariout	8.5 ± 0.9
575	Gatami	7.3 ± 0.9
863	Manchuria	6.8 ± 0.3
663	Chile	3.7 ± 0.6
	HOODED HULL-LESS	
262	Nepal (White Hull-less)	5.7 ± 1.1**
	HOODED HULLED	
1177	Horsford (Wing's Sel.)	5.9 ± 1.0

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May). (Sept. 12) Since September 8th, .9 of an inch of precipitation has fallen, most of which was in the form of snow. This has delayed thrashing and fall seeding greatly. All of the harvesting on the Station farm has been completed but a large acreage of wheat on neighboring farms has been weighted to the ground by the snow. It is reported that as high as 400 acres on individual farms is lying down.

Of the cereal project work the furrow drill and the winter wheat varietal experiments, and a small part of the nursery were seeded before the snow began falling. Most of the corn on the rotations has been harvested but the corn on the cereal project is still standing. None of the plat thrashing has been done but we are ready to thrash the plats as soon as the shocks dry out. Practically all of the commercial fields of grain have been thrashed.

The soil will be in ideal condition for fall seeding as soon as the weather settles.

The maximum temperature of the past two weeks was 94° on August 28, and the minimum 19° on September 9. The corn and all other green vegetation is frosted.

* Computed at 32 pounds per bushel the same as oats.
** [illegible] per bushel to compare [illegible].

Dr. C. R. Ball was here September 2 and Mr. J. H. Martin arrived September 7 to assist in seeding the winter wheat nursery. Mr. A. W. Emerson of Manuan, N. Dak., was here from September 8 to 12 to look over the shelterbelt work.

State College of Agriculture, Bozeman (Barberry Eradication, H. E. Morris) No report.

WESTERN BASIN AND COAST AREAS
(North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (L. C. Aicher). No report.

OREGON

Sherman County Branch Station, Moro (D. E. Stephens). (Sept. 14) We are having unusually cool weather here for this time of the year. On the night of the 11th we had a temperature of 29 degrees and it was below freezing on the nights of the 12th and 13th. These are unusually low temperatures here so early in the fall.

We have not yet had any rain and are anxiously waiting for some so that we can start our planting of winter wheat. The first sowing of the rate and date experiment was made on the 12th. Our varietal trials and field plantings will not be made until soil moisture conditions are better.

CALIFORNIA

Rice Field Station, Biggs (J. W. Jones). No report.

Plant Introduction Station, Chico (V. H. Florell). No report.

Agricultural Experiment Stations, Davis and Berkeley (F. N. Briggs and W. W. Mackie). Under date of August 27, Professor W. W. Mackie gives the following information:

The harvesting and thrashing operations on the various wheats of the rust and smut plats at Davis have been completed.

A complete rust epidemic at Davis induced by weekly irrigations afforded a good record of varietal resistance. Of the 1,000 varieties, 54 were free from rust, while two other varieties showed only a trace. The remainder of the varieties showed more or less rust.

On 1,139 wheat hybrids the stem rust attack was rated as follows:

Rust free (no stem rust attack).....	50
Highly resistant (0-5% stem rust attack).	87
Resistant (10-25% " ").	17
Susceptible (26-100% " " ").	985

The most promising varieties and hybrids are being subjected to stem rust test in the greenhouse to check the field results.

Seventy barley hybrids selected for resistance to barley scald and wind shattering again demonstrated their resistance.

Mr. Briggs has completed the counts of the wheat varieties subjected to bunt attack but the reports have not been prepared completely.

For the third consecutive year there has been failure to secure infection by barley smut (Ustilago nodum) even when the seed had been blackened with spores. Only a trace or less than 0.1% of smutted heads were recorded as a rule. Barley fields planted by the farmers were more or less badly smutted in many areas of the State. At Port Costa where barley was being shipped by boat to England, the greater portion of the barley was observed to be smutted to a considerable extent.

C E R E A L C O U R I E R

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 September 30, 1921 No. 24
Personnel (Sept. 21-30) and Project Issue.

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PERSONNEL ITEMS

Donald B. Anderson, field assistant in barberry eradication in Ohio, resigned September 30 to resume his studies at Ohio State University.

Walter S. Collins, field assistant in barberry eradication in Illinois, resigned September 20, the work for which he was appointed having been completed.

Raymond A. Dobbins, field assistant in barberry eradication in Ohio, resigned September 17 to resume postgraduate work at the College of Agriculture of Ohio State University.

Leo J. Federer, field assistant in barberry eradication in Wisconsin, resigned September 17 to resume his studies at the University of Wisconsin.

John R. Fitzsimmons, state leader of the barberry eradication campaign in Colorado, resigned September 28 and will resume his studies in landscape architecture at Harvard University. He was an office visitor September 23.

Henry C. Gilbert, state leader of the barberry eradication campaign in South Dakota, resigned September 26 to become instructor in botany at the University of Minnesota, where he will also take graduate work.

C. P. Hartley returned to Washington September 24 from points in Pennsylvania, New York, Connecticut, Rhode Island, and Massachusetts.

Frank J. Kohn, field assistant in barberry eradication in Wisconsin, resigned September 30, the work for which he was appointed having been completed.

George W. Martin, field assistant in barberry eradication in Illinois, resigned September 17 to return to his former position as Professor of Botany at Monmouth College, Galesburg, Ill.

Walter H. Nuttall, field assistant in the barberry eradication campaign in Illinois, resigned September 20, the work for which he was appointed having been completed.

Glenn E. Paxton, field assistant in the barberry eradication campaign in Colorado, resigned August 31 to accept a part-time position and do graduate work at the University of California.

William R. Perrin, field assistant in the barberry eradication campaign in Nebraska, resigned September 20 to resume his studies at the University of Nebraska.

Joseph H. Pleck, field assistant in the barberry eradication campaign in Wisconsin, resigned September 13 to resume his studies at the University of Wisconsin.

Miss Virginia Putman, in charge of bookkeeping and fiscal statements in the Office of Cereal Investigations, has resigned, effective September 30, to return to her home in Birmingham, Ala.

F. D. Richey left Washington September 24 to visit the Tennessee Experiment Station, and the substation at Jackson, Tenn., to discuss possible future cooperation in corn breeding, and will then proceed to Burdette, Ark., to harvest his corn breeding experiments.

Frederick W. Roewekamp, field assistant in the barberry eradication campaign in Wisconsin, resigned September 13 to resume his studies at the University of Wisconsin.

Harmon A. Runnels, field assistant in the barberry eradication campaign in Ohio, resigned September 16 to resume undergraduate work at the College of Agriculture, Ohio State University.

Ernest A. Schulz, field assistant in the barberry eradication campaign in Illinois, resigned September 30, the period for which he was appointed having terminated.

William N. Steil, field assistant in the barberry eradication campaign in Wisconsin, resigned September 17 to accept a position in the Botany Department of the University of Wisconsin.

Harvey E. Stork, field assistant in barberry eradication in Minnesota, has resigned effective September 12.

VISITORS

Dr. H. G. Knight, until recently Director of Agriculture at the Experiment Station, Stillwater, Okla., was an office visitor September 21.

Prof. Stewart Lockwood, extension entomologist of the North Dakota Agricultural College, was an office visitor on September 27.

K. K. Skovgaard of Fremmegaard, Horsholm, Denmark, a recent student in agriculture at Iowa State College and Cornell University, and who is now returning to Denmark, was an office visitor on September 27.

MANUSCRIPTS AND PUBLICATIONS

Galley proof of the paper entitled "Ash Content of the Awn, Rachis, Palea, and Kernel of Barley during Growth and Maturation," by Harry V. Harlan and Merritt L. Pope, was read on September 23.

Galley proof of Department Circular 188, entitled "Progress of Barberry Eradication," by Dr. F. L. Mayne, was read on September 23.

A paper entitled "The So-Called Take-All Disease of Wheat," by Harold H. McKinney, Assistant Pathologist in charge of Take-all Investigations, was submitted on September 29, for publication in the Journal of Agricultural Research. This research was conducted in cooperation with the Wisconsin and Illinois Agricultural Experiment Stations.

C E R E A L C O U R I E R

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 October 10, 1921 No. 25
Personnel (Oct. 1-10) and Field Station (Sept. 16-30) Issue.

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PERSONNEL ITEMS

Ralph W. Adamson, field assistant in barberry eradication in Iowa, resigned September 7 to accept a position as agricultural teacher at Crystal Lake, Ia., at a salary at the rate of $150.00 a month.

Frank G. Beyschlag, field assistant in barberry eradication in Iowa, resigned September 26 to resume his studies at Iowa State College.

Abner J. Brictson, field assistant in barberry eradication in South Dakota, resigned September 30 to resume his studies at the South Dakota State College.

Raymond Bulger, field assistant in barberry eradication in South Dakota, resigned September 30 to resume his studies at the South Dakota State College.

Ralph E. Carr, assistant in cereal investigations at the Agricultural Experiment Station, Lafayette, Ind., resigned September 30.

N. Ray Carmichael, field assistant in barberry eradication in Iowa, resigned September 15 to accept a fellowship at Iowa State College at $90 a month.

Chas. E. Chambliss, agronomist in charge of rice investigations returned on October 1 from a field trip covering the Crowley Rice Station in Louisiana and points in Florida and the coastal portions of Georgia and South Carolina, where varieties of nonirrigated rice are being grown to determine their adaptation and value.

Ross D. Davies, field assistant in barberry eradication in South Dakota, resigned September 22 to resume his studies at the South Dakota Agricultural College.

A. C. Dillman, agronomist in charge of flax investigations, left Manhan on September 22 en route for Washington by automobile. Official stops were made at Fargo, St. Paul, Madison, Chicago, and Urbana. He arrived in Washington October 7.

Robert L. Fennell, field assistant in barberry eradication in Iowa, resigned September 26 to resume his studies at the Iowa State College.

Anton E. Flamer, field assistant in barberry eradication in North Dakota, resigned September 24 to resume his college studies.

Donald G. Fletcher, field assistant in barberry eradication in Minnesota, resigned September 30 and will resume his college studies.

William B. Gass, field assistant in barberry eradication in North Dakota, resigned September 30.

Kenneth R. Grant, field assistant in barberry eradication in Iowa, resigned October 5, and will resume his college studies.

Charles O. Hinkley, field assistant in barberry eradication in Minnesota, resigned on October 8 to resume his studies at the College of Agriculture of the University of Minnesota.

William A. Kurtz, field assistant in barberry eradication in South Dakota, resigned September 30 to resume his studies at the South Dakota State College.

Guy A. Larson, field assistant in barberry eradication in South Dakota, resigned September 30 to resume his studies at South Dakota State College.

Arthur E. McClymonds, agronomist, has been appointed superintendent of the Aberdeen (Idaho) Substation.

John H. Martin returned to Washington on October 5 after completing seeding and taking emergence notes on the nurseries containing cold-resistant wheats at Fargo, Mandan, and Dickinson, N. Dak., and Moccasin, Mont. He was married on September 28 to Miss Gladys Andrews of Des Moines, Ia.

Kirk Mears, field assistant in barberry eradication in South Dakota, resigned September 30 to resume his studies at South Dakota State College.

Theodore C. Meldahl, field assistant in barberry eradication in North Dakota, resigned September 30.

Walter H. Michaels, field assistant in barberry eradication in South Dakota, resigned September 30 to resume his studies at South Dakota State College.

Wilfred D. Mills, field assistant in barberry eradication in Michigan, resigned September 30.

Edwin W. Pohl, field assistant in barberry eradication in Iowa, resigned September 26 to resume his college studies.

Donald R. Porter, field assistant in barberry eradication in Iowa, resigned September 27 to resume his studies in Iowa State College.

John K. Reiley, office assistant to Mr. J. R. Holbert at Bloomington, Ill., in the investigations of root, stalk, and ear rots of corn, resigned September 30 to become secretary-treasurer of a business enterprise recently organized in Bloomington.

Albert S. Severson, field assistant in barberry eradication in North Dakota, resigned September 27 to become instructor in the Agricultural College, North Dakota, at a salary of $200 a month.

Forrest C. Strong, field assistant in barberry eradication in Michigan, resigned September 30.

Matthew E. Tindall, field assistant in barberry eradication in North Dakota, resigned September 24.

Dr. W. H. Tisdale, pathologist in charge of smut investigations, left for Granite City, Ill., October 2, to be gone for a week or ten days, to direct and assist in the fall planting of the flag-smut plats.

Mr. J. F. Trost, assistant pathologist in corn root, stalk, and ear rot investigations, stationed at Lafayette, Ind., visited Washington October 1-3 for the purpose of looking over the corn-improvement experiments and discussing with Dr. Hurd further details concerning hydrogen-ion determinations.

Paul C. Underwood, field assistant in barberry eradication in South Dakota, resigned September 21.

Archie M. Waldie, field assistant in barberry eradication in North Dakota, resigned September 15 to accept a position as high school instructor at Wishek, N. Dak., at a salary of $175 a month.

Bert Wick, field assistant in barberry eradication in North Dakota, resigned September 30.

MANUSCRIPTS AND PUBLICATIONS

Page proof of Journal of Agricultural Research article entitled "Aecial Stage of the Orange Leaf Rust of Wheat, *Puccinia triticina* Erikss.," by H. S. Jackson and E. B. Mains, was read October 6.

Farmers' Bulletin 1226, entitled "Take-all of Wheat and Its Control," by Harry B. Humphrey, Aaron G. Johnson, and Harold H. McKinney, has been received from the Government Printing Office.

Galley proof of Department Bulletin 576, entitled "Cultural Experiments with Grain Sorghums in the Texas Panhandle," by Benton E. Rothgeb, formerly Assistant Agronomist in Charge of Grain-Sorghum and Broom-Corn Investigations in this Office, was read on October 10.

TRANSLATIONS

Supplementing the list of available translation of foreign papers on cereals and cereal diseases given in volume 13, nos. 2, p. 12-15; 8, p. 52; 10, p. 69, of the Cereal Courier for January 31, April 20, and May 10, 1921, respectively, the following translations are now available in the Bureau of Plant Industry Library:

Burmester, H. Vergleichende Untersuchungen über den Einfluss der verschiedenen Samen-Beiz-Methoden auf die Keimfähigkeit gebeizter Samenkörner und über ihre pilztötende Wirkung. (Comparative investigations relative to the influence of various treatments with fungicides upon the germination of the seed treated and their power to kill the fungi.) Zeitsch. f. Pflanzenkrankh., 18: 154-187, no. 3. 1908.

Campbell, C. Sulla influenza diretta della pianta selvatica sul domestico, e sulla azione che soluzioni acide, direttamente assorbite, esercitano sulla pianta. (On the direct influence of the [illegible] of the wild plant upon the cultivated, and on the action which the acid solutions exercise upon the shoot when directly absorbed.) Atti della Reale Accad. dei Lincei, 27: 57-61. 1918.

Cuzzini, G. Il carbone del grano turco. (The smuts of maize.) Bollet. R. Staz. Agraria di Modena, n.s., 10: 71-86. 1921.

Deckenbach, O. Zur Frage ueber Aetiologie der Pellagra. (The question regarding etiology of pellagra.) Centralblatt f. Bakt. und Parasit. Kunde, 45: 507-512. 1908.

Gassner, G. Die Teleutosporenbildung der Getreide-Rostpilze und ihre Bedingungen. (The formation of teleutospores of cereal rusts and the conditions.) Zeitschr. f. Botanik., 7: 65-120. 1915.

Girola, C. Cultivo del lino. (The cultivation of flax (Linum).) Anales d.l. soc. rural Argentina, 54: 103-112, 145-149, 189-197. 1920.

Griffon and Maire. Une maladie du maïs de Cochinchine. (A disease of maize in Cochinchina.) Bull. Soc. mycol. de France, 28: 335-337. 1912.

Hecke, L. Zur Frage der Ueberwinterung des Gelbrostes und das Zustandekommen von Rostjahren. (The hibernation of the yellow rust, and the causes of yellow-rust years.) Naturwiss. Zeitschr. f. Forst u. Landw., 13: 213-220, no. 4-5. 1915.

Henning, E. Anteckningar om den s.k. sädesgummi med anledning av dess uppträdande å vete 1915-1918. (Notes on the so-called smooth-disease with respect to its occurrence on wheat 1915-1918.) Medd. no. 175 från centralanst. försöks. jordbruks. afd. landtbr. bot.no. 14, p. 1-11. 1918.

---------- Den norske berberis lagen och dess förhistoria. (The Norwegian barberry legislation and its early history.) Landt-[illegible] 27, no. 4[illegible] p. 1-8. 1916.

---------- [illegible] bör icke odlas. ([illegible] ought not to be cultivated.) [illegible] no. [illegible]. 1912.

Kiessling, L. Ueber die spezifische Empfindlichkeit der Gerste gegenueber der Streifenkrankheit. (On the specific susceptibility of barley relative to the stripe-disease.) Fruhwirt's Zeitschr. f. Pflanzenzucht. 4: 31-43. 1916.

Lang, Wilhelm. Ueber die Beeinflussung der Wirtpflanze durch Tilletia tritici. (On the influence of Tilletia tritici upon the host plant.) Zeitschr. f. Pflanzenkrankh., 27: 80-99. 1917.

Lind, J. Forsög med Midler mod Rögen Bygorand. (Experiments with fungicides relative to Ustilago nuda.) Tidsskr. for Planteavl., 22: 212-232. 1915.

Madariaga, A. Plagas y enfermedades del maiz. (Plagues and diseases of Indian corn.) La Revista agricola, 4: 449-455. 1919.

Mazé, P. Chlorose toxique du maïs, la sécrétion interne et la resistance naturelle des végétaux superieurs aux intoxications et aux maladies parasitaires. (Toxic chlorosis of Indian corn, the internal secretion and the natural resistance of the higher plants against poisoning and parasitic diseases.) Compt. Rend. Hebdom. Soc. Biol., 68th year, 79: 1059-1066. 1916.

-------- Note sur les chloroses des végétaux. (Vegetable chloroses.) Compt. Rend. Hebdom. Soc. Biol., 66th year, 77: 539-541. 1914.

Oberstein. Die neue Beizanlage System L. Wachtel-Breslau. (The new method of treatment with fungicides "Wachtel-Breslau-System.") Mittheil, Deutsch. Landwirt. Gesellsch. no. 19, p. 302-303. 1921.

Pantanelli, E. Su la resistenza delle piante al freddo. (On the resistance of the plant to cold.) Atti d. Accad. Reale dei Lincei, 27: 148-153. 1918.

Petri, L. Osservazioni sopra il rapporto fra la composizione chimica delle radici della vite e il grado di resistenza alla filossera. (Observations on the correlation between the chemical composition of the roots of Vitis and the power to resist the Phylloxera.) Atti d. R. Accad. dei Lincei Rendic., 19: 27-34. 1910.

Strampelli, N. Genealogia del frumento Carlotta Strampelli. (The genealogy of the wheat "Carlotta Strampelli.") Atti r. Accad. d. Lincei, ser. V, vol. 27. 1918.

Vestergaard, H. A. S. Gulrustens Virkning paa Udbyttet af forskjellige Hvedesorter. (The effect of the yellow rust upon the crop of different varieties of wheat.) Tidsskr. f. Planteavl., 22: 110-115. 1915.

Viglani, D. Sulla selezione del frumento "Gentil Rosso." (On the selection of the wheat "Gentil Rosso (noble red).") Stazion. speriment. agrarie Italiane, 52: 5-13, Fasc. 1-2. 1919.

Voglino, Pietro. -------- ---- -------- ----- ---------- (Concerning the development and parasitism of Septoria graminum and S. glumarum Pass.) In Annali della R. Accademie d'Agricoltura di Torino, 46: 255-282. 1903.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens, and Substations (R. R. Childs). No report.

SOUTH CAROLINA

Pee Dee Substation, Florence (Hugo Stoneberg). (Oct. 3) The weather continued hot and dry until the last few days of the month when a few light showers relieved the situation. The rain greatly reduced the temperature, and the first few days in October were quite cool, especially the nights.

The weather conditions that prevailed during September were very favorable for rapid progress in harvesting and recording data regarding the ears in our corn breeding experiments. We finished harvesting on October 1, and the following week the selfed ears, saved for seed, were packed and shipped to Washington.

This is the fifth year of selfing the garrick variety. One of the main objects of the work is to develop a strain of corn with good shuck protection - a thick and harsh shuck with considerable extension beyond the tip of the ear to prevent weevil damage in Southern corn.

C. H. Kyle arrived from Washington on September 18 to take notes during the harvesting of the corn breeding experiments.

Chas. E. Chamboliss visited the station on September 29 and 30 to inspect the rice selections adapted to non-irrigated conditions. However, the continued long dry spell during August and September proved to be too severe for the production of rice this year.

Other station work finished or in progress at the present writing is as follows: - the picking of the cotton plats in the various fertilizer and rotation experiments, harvesting peanut experiments, threshing oat plats, and baling hay.

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor). (Oct. 1) The first seeding of the fall was made September 15, when the early seeding of the rate-date-and-method-of-soil-preparation wheat plats was completed. Continuous dry weather had the soil in poor condition for plowing and the seed in the plowed plats was sown in ground which was far from a good seed bed. The disced land worked into much better shape. Seventy fortieth-acre plats are used in this experiment with Purple Straw, C.I. 1915, as the variety. In 1921 the following data were obtained.

Rate of seeding in pks.	Acre-yield in bus.
2	17.0
3	19.7
4	21.1
5	21.0
6	21.5

7	22.2
8	22.5
Av. yield of disced plats	20.9
" " " plowed "	20.6
Av. yield when sown Sept. 15	16.2
" " " " Oct. 7	21.6
" " " " Oct. 30	22.1

The higher yields of the seven and eight peck rates of seeding and the October 30 date of seeding were in part due to the poor germinating weather of the early fall.

The buckwheat plats were harvested September 16. This crop was grown on land which had given a good yield of wheat the past season. Little difference in yielding ability was obtained in the test between the Japanese and Silverhull varieties. The average of the three plats of each variety was:

Japanese - 18.2 bu. per acre.
Silverhull - 17.8 bu. per acre.

Fifty-nine days were required for growing this crop, and the ground, after the crop was removed, worked into excellent shape for winter wheat.

The oat plats for 1922 were sown September 29. Several varieties or selections which offered little promise were discarded by Mr. T. R. Stanton, and replaced by others worthy of a test. Six hybrids or selections made by Mr. Stanton were sown in increase plats for further testing.

NEW YORK

Cornell University Experiment Station, Ithaca (H. H. Love). (Oct. 4) During the month of September most of the thrashing of small grains was completed with the exception of a few oat hybrids. This included also the thrashing of the oats, wheat, and rye grown on the outlying plats.

For further expansion of plant breeding, some new land was obtained this year on the University farm which is more suitable for experimental plats than some of the land already held. The wheat nursery and plats as well as rye were put on one of these new fields. The seeding of the nursery was all completed in good time and the wheat is starting off nicely. As usual, a large sowing of hybrids was made in the Plant Breeding Garden, which soil is better adapted for the study of individuals. The material from California is now being worked over preparatory to making a further seeding there, and in addition to this material a lot of seed from the first generation hybrids of several species crossed is being prepared for seeding. Among these crosses are a number where the same form has been crossed with both the true wild and the synthetic wild in order to determine whether these two types behave the same in inheritance.

This fall three test plats of wheat have been sown in Madison, Ontario, and Genesee Counties. The rye work which has been under way in Columbia and Albany Counties is still being continued and seedings are being made there this week.

The Forward wheat has shown up very well again this year, and for sections where red wheat is wanted it can be recommended without any hesitation. Much interest is being manifested in it and this coming year a considerable amount

of seed will be available. The yields of the drill plats of wheat for this past year are as follows:

1191a1-6 White Chaff x Rural New Yorker Sel.	43.7
Forward	43.4
4-86 Currell's Prolific x Poltz	42.1
Sel. No. 133-15	40.9
203+a1-7 Dawson's Golden Chaff x Fulcaster	39.4
1027a1-8-5 Golden Cross x New Columbia	39.3
Junior No. 6	39.1
1027a1-8-7-6 Golden Cross x New Columbia	38.0
12c-26 Mondyke Sel.	37.8
O. A. C. 104	36.9
Gold Coin Sel. 129-65	36.1
Sel. 133-232	35.7
Sel. 132-14	35.5
1027a1-8-6-5 Golden Cross x New Columbia	34.5
Honor - Aver. of all checks	34.7
1027a1-8-6-12 Golden Cross x New Columbia	34.4

In addition to these yields, the yields of the plats grown at Batavia, N. Y., are as follows:

Forward	44.1
Honor	40.8
1027a1-8-6-12	37.8
Junior No. 6	37.4
1127a1-8-7-6	37.4

Rhinebeck (Corn Investigations, L. S. Mayer). No report.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Crowley Rice Station, Crowley (J. Mitchell Jenkins). No report.

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler). (Oct. 3) During the latter half of September the rainfall has been excessive, and although the corn crop over the State as a whole is considered very good, a week or two of dry weather before freezing would be very beneficial. Wheat seeding has been delayed because of wet ground except in the northwest and southwest sections, where it has made some progress. We expect to sow our winter wheat on the station field about the end of this week.

The results of oat varietal experiments in rod rows on the station field at Columbia this season are shown below. Each yield represents the average of four replicate 3-row plats protected from competition by one discarded border row on each side.

Variety	Yield, bu. per a.
Burt 015	43.13
Fulghum 012+	45.38
King 042	43.19
Fulghum 014g	42.73
Fulghum 065	42.00

Fulghum 0113	42.00	Culberson 021	24.75
Fulghum 0152	39.75	Early Gothland 025	23.44
Fulghum 0151	39.75	C.I. 603 018	22.50
Fulghum 0145	39.19	Silvermine Sel.051	22.13
Sterilis Sel. 055	38.63	Silvermine 0117	21.75
Monarch Sel. 045	35.63	Early Dakota 024	21.56
Silvermine 050	31.69	Garton 748 029	21.00
Irish Victor 036	29.81	Swedish Sel. 057	21.00
Monarch 044	29.63	Swedish Sel. 0165	20.81
Silvermine 0165	28.31	Storm King 056	20.06
Scottish Chief 049	26.63	Danish Island 022	19.69
Green Russian 035	26.06	Joanette 038	19.31
Canadian 016	25.31	Sparrowbill (C)054	15.38
Silvermine 0115	25.13		

IOWA

Iowa State College, Ames (Barberry Eradication, R. H. Porter). No report.

Agricultural Experiment Station, Ames (L. C. Burnett). No report.

ILLINOIS

State Entomology Building, Urbana (Barberry Eradication, L. R. Tehon). No report.

Funk Brothers Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert). (Oct. 1) Work on the harvesting of the experimental plats was started on September 26 and probably will continue well through November. In the plats which have been harvested so far, the disease-free seed has yielded much better than the diseased seed, the highest yielding disease-free rows producing at the rate of slightly over 100 bushels to the acre.

Within the last six weeks Farmers' delegations totaling between seven hundred and eight hundred men and representing twenty different counties have visited the experimental plats. These delegations included many of the prominent corn breeders throughout the State.

INDIANA

Purdue University Agricultural Experiment Station (Corn Root, Stalk, and Ear Rots, G. N. Hoffer). (Oct. 10) The harvesting of the breeding plats has been completed at Shelbyville, Battleground, and Wanatah, Ind. The inoculation and varietal plats at Lafayette are being harvested at the present time. A severe windstorm on September 19 damaged the varietal and inoculation plats at Shelbyville, but Mr. Trost reports that it will be possible to obtain the yield records.

On September 27 Mr. J. F. Trost made selections of two hundred ears of hominy corn grown on the farm of Mr. Scott Daup, Columbus, Ind. The ears were taken from stalks showing various symptoms attributed to root rots and will be used for experiments which are being conducted in cooperation with the Bureau of Raw Products Research of the National Canners' Association, Washington, D. C.

Mr. Trost conferred with Dr. A. M. Hurd of the Cereal Office in Washington, D. C. October 1-3, with reference to certain physiological investigations

which he will conduct at Lafayette, Ind. He also made final record on the experimental plat work at Arlington.

Mr. G. M. Smith and G. N. Hoffer inspected the sweetcorn fields set aside by the Sears and Nichols Canning Company at Chillicothe and Circleville, Ohio, on September 27. The fields were badly damaged by the corn ear worm and Fusarium mold. Practically no seed ears of any value were found. This condition, however, seemed to be representative of corn in that section of the State.

A survey of over thirty fields of dent corn in the vicinity of Lafayette by Prof. H. T. Wiancko, R. S. Thomas, and G. N. Hoffer on September 29 has shown that between 15 and 20 per cent of marketable-sized ears have been rendered unfit by the ravages of the corn ear worm, and Diplodia and other molds.

Dr. G. N. Hoffer has just arrived in Washington after a trip to Amherst, Mass., New Haven, Conn., Kingston, R. I., and Philadelphia. Conferences were held at these places with parties interested in the root rot investigations, with special reference to the physiological studies.

Mr. B. H. Duddleston is assisting the Crops Department of the Experiment Station in harvesting the varietal experimental plats which have been planted in seven localities within the State. He is also taking final data on the fertilizer experiments.

Purdue University Agricultural Experiment Station (Leaf Rust Investigations, H. S. Jackson and E. B. Mains). No report.

Purdue University College of Agriculture (Barberry Eradication, R. J. Hosmer). No report.

OHIO

College of Agriculture of Ohio State University, Columbus (Barberry Eradication, John W. Baringer). (Oct. 1) One field scout resigned September 3 to accept a position as a traveling salesman. Near the middle of the month four scouts, the remainder of the field force, resigned to resume their studies at Ohio State University. The State Leader plans to continue the field work as long as weather permits.

We were fortunate in securing men this year who have had previous experience on barberry eradication work. It may be possible to secure them again next summer. The value of experienced men on barberry field work cannot be overestimated.

One half of Henry County, one-fourth of Fulton County, and one-fourth of Lucas County was covered in September by a farm-to-farm original survey. The small towns in this territory were also worked. Twenty-eight locations were found in the towns and thirty-two locations were recorded in the country. All plantings found were removed. These sixty locations contained 161 barberry bushes. One planting of six bushes was removed on resurvey.

Toledo and vicinity presents a situation similar to our Dayton problem. Wealthy suburban citizens have spent much money and time in landscaping their premises. Many beautiful hedges and clumps of purple barberries are in evidence and considerable argument must be produced to induce property owners to part with them.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy). No report.

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson). No report.

Department of Agriculture, State Capitol, Madison (Barberry Eradication, Noel F. Thompson). No report.

MINNESOTA

College of Agriculture, University Farm, St. Paul (Barberry Eradication, Leonard W. Melander). (Oct. 1) Regardless of the fact that considerable rainy weather held up the work, September was a successful month. Eight counties were completed by the Federal and State forces in the farm-to-farm survey, making a total of 46 counties completed in this State to date. Twenty-nine counties have been completed since July 1, and 33 counties since April 1. The State forces discontinued work the 30th of September.

During the month of September, 78 bushes were found in cities and towns on nine properties. One thousand two hundred, and twenty-three bushes were found in the country on 49 properties, making a total of 1301 bushes found, of which number 1,162 were removed. Three escaped bushes were found on two properties.

Much of the State Leader's time was occupied in looking after demonstrations at fairs. The State Fair was in session for seven days. Barberry eradication had a booth fifteen feet square, and showed by concrete illustrations how rust is spread from the barberries to the grasses and grains. Actual specimens of these were mounted on compo-board panels. One panel had rusted specimens representing the following forms of stem rust: Wheat, rye, oats, and Agrostis. One thing very interesting was the fact that a higher percentage of the State Fair visitors this year were acquainted with the barberry than in previous years. This shows the effect of the publicity of the past year.

Besides the State Fair, barberry demonstrations were shown at twenty-five county fairs.

From now on the work will not be so extensive, but an attempt will be made to pass the goal of fifty completed counties in this State before the end of this season's field work.

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman). No report.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger). (Oct. 4) The last half of September was dry; the days warm and nights rather cool. Crops have ripened rather rapidly, especially milo. Some wheat that was sown soon after the rain, on the 8th of the month, emerged and is looking good. Most of the wheat over the county remains to be sown. Should moisture conditions be favorable within the next month, a large acreage will be sown.

Work on the cereal project has been the taking of final notes, harvesting, and selecting seed heads. A few of the later date-of-seeding plats are all that remain to harvest. Quite a lot of work remains to be done with some of the hybrids and there is no chance to run out of work for another year.

Station visitors for the last half of September were Mr. Geo. C. Husmann of the Office of Pomological Investigations on September 27, and Mr. B. E. Rothgeb of the Bureau of Markets from September 29 to October 1.

Maximum temperature for the period was 97° on September 28, and the minimum was 40° on September 30. Precipitation was 0.11 inch in two showers.

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker). No report.

Hays Branch Station, Hays (A. F. Swanson). (Oct. 3) The weather is still dry and unfavorable for the start of a new wheat crop. Wheat is coming up very irregularly and there is danger of some of it dying if it germinates at all.

The thrashing of the sorghums will begin on the cereal project tomorrow morning. Today the shocks are being weighed and the machine put in readiness for the event.

The Golden Belt Fair was held in Hays last week, and the Experiment Station put on an exhibit featuring a number of the crops grown under experimental conditions.

COLORADO

Agricultural College, Fort Collins (Barberry Eradication, C. D. Learn, Col.). No report.

Akron Experiment Farm, Akron (F. A. Coffman). (Oct. 1) The month of September at Akron was warm and dry. The total precipitation for the month was but .79 of an inch, which came in but one shower heavy enough to be of any use to plants. No killing frost has been experienced at Akron up to October 1. On September 22, frost damage to a considerable extent was experienced on the lower points about the station, although the minimum temperature for that date as recorded at the weather station was 34°. The weather station is located on rather high land.

The work on the station has progressed very favorably during the month. All of the thrashing with the exception of the sorgo and millet plats has been completed. Fall seeding has been completed for some time in all but the date-of-seeding experiments. The dry weather is proving very detrimental to fall-sown wheat, especially on the corn ground. The soil has not received sufficient moisture to germinate the wheat sown on corn ground to any extent, and no germination can be expected until rain is received. Several very high wind storms occurred during the month and this has tended to reduce the soil moisture very materially.

During the past week some time has been spent in making sorghum head selections for seeding in head-rows next season. The past season has been unusually favorable to the sorgo crops and many varieties which probably would not mature in an average season have reached maturity this year. This has made head selection more difficult as early maturity is one of the most important factors in sorghum selection at this station.

Corn on the Akron Station is ripening under favorable conditions. The corn crop prospects are much better than the season's weather records would lead one to believe. Some of the better rows and plats may produce yields of close to 35 or 40 bushels. The corn at Akron this season is very badly infested by worms. In some ears 3 and 4 worms are to be found. This will very probably reduce the quality of this season's crop very considerably. Most of the experimental corn probably will be husked during October.

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel). No report.

WYOMING

Cheyenne Experiment Farm, Cheyenne (A. L. Nelson). (Oct. 3) There has been no change in the weather conditions save that on September 29 the first frost was recorded with a temperature of 29 degrees.

Thrashing in the community is in progress and fair yields are being secured. The farmers are shipping most of their crop immediately, receiving in the neighborhood of 61¢ or 62¢ per bushel at the shipping points. Great discouragement prevails among them.

Thrashing at the station is in progress. The dry-land plats were finished Thursday. All corn was cut Tuesday and the spring cereal plats will be thrashed during the coming week.

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, Ralph U. Cotter). No report.

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, Lynn D. Hutton). No report.

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel). (Oct. 1) Thirteen of the first twenty days of September were rainy days. Considerable damage was done to flax in the wilt experiments which stood out in the rains. It will not be possible to obtain yield data on some varieties where such information was desired.

Mr. A. C. Dillman, in charge of the flax investigations project, visited the station September 23 and 24, and Dr. A. G. Johnson visited the station September 26 and 27 to discuss the cooperative experiments with the station officials.

We have started thrashing by hand the several hundred 5-foot and rod rows growing on both new and old flax land. In this connection we are greatly obliged to Mr. J. C. Brinsmade for supplying us with a hand thrasher from Mandan. By the aid of this machine, seed from small samples of flax may be removed from the plants and cleaned with considerable ease. Along with thrashing, final counts are being made to determine the percentages of wilting in the various wilt experiments.

State College of Agriculture, Agricultural College (Barberry Eradication, George C. Mayoue). (Oct. 1) Weather conditions on account of the heavy rains over the State were not very favorable for field work during the first half of

the month. However, since the 17th the work has progressed well. All the assistants, by the leader's request, put in extra miles in the field during the last ten days of September in order to make up the lost time. At present the roads are in most ideal condition for field work, in that any section line road can be traveled.

Territory equivalent to two counties was covered in August in the farm-to-farm survey. In addition, ten days were spent in checking barberry removals in Cass County.

In the rural districts 17+ bushes were found and removed in the original survey, and 32 sprouts in the country and 2 sprouts in town were found and removed in checking the barberry removals. Local people in Cass County volunteered information which assisted in finding several sprouts.

A barberry demonstration was put on at Forman, Sargent County Fair, September 28 to 30. The people showed a very keen interest in this demonstration.

Before the end of the month four assistants resigned, two of which entered college and two accepted positions as instructors.

No infection was found on the bushes which were located this month. However, black rust was found on wild grasses in all the territory where the assistants were working.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.) (Oct. 3) The latter part of September has been generally cool, clear, and dry.

All of the field work for the season is completed except for about a dozen flax nursery rows which are still too green to harvest.

On September 22 a barbecue was held on the Dawson ranch, about twenty-five miles south of Mandan, to which everybody was invited. There were agricultural talks interspersed with songs by the famous Mandan "Nut Quartette." The main theme of talks and songs was that this part of the country, the home of the buffalo, is naturally better adapted for raising stock than it is for raising wheat, with especial emphasis on Angus cattle which are raised on that ranch. The substantial part of the picnic lunch was a young Angus steer hot and tender direct from an underground oven where it was roasted in quarters. About eight hundred people from Mandan and farms around were present.

Mr. Dillman left by auto for Washington on September 22.

Mr. J. H. Martin arrived September 25 to make counts on the winter wheat nursery. Stands were very good as a result of the wet weather early in September.

Mr. C. W. Warburton visited the station September 29 while in Mandan in the interests of collecting federal farm loans.

There was a slight frost on the night of September 24, though damage was very slight and the minimum temperature recorded was only 31°. A temperature of 31° was recorded October 1, but the damage was very slight.

Maximum temperature for the last half of September was 84°, recorded September 27; minimum, 31°, recorded October 1; precipitation, 0.11 of an inch.

Dickinson Substation, Dickinson (Ralph W. Smith). (Oct. 3) The first killing frost of the season occurred on October 1, with a minimum temperature of 24°. On September 10 there was a minimum temperature of 30° but there was only a trace of injury. The total precipitation for September was 2.15 inches, most of which fell during the first half of the month.

A good stand of winter wheat was secured in the duplicate plats drilled in standing corn. The winter rye varieties were eaten off by grasshoppers and were reseeded. The winter wheat nursery is in good condition.

A rather large acreage of winter rye has been sown in this locality and the frequent rains in early September insured good germination.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May). (Oct. 1) All of the grain on the station farm has been thrashed with the exception of the spring nursery. This will probably be thrashed the fore part of next week. The seeding of the fall nursery and the single plats of fall wheat was completed today, in addition to taking final weights on the corn experiments under the cereal project. Stand counts on Mr. Martin's hybrid wheat nursery were completed yesterday. Another two weeks will close the busy season here.

I absolutely have not had time to do any tabulating of grain yields and consequently cannot include them in this report but I will probably have them ready for the next issue of the Courier.

All of the early sown fall wheat has emerged with full stands. There is abundance of moisture in the soil to keep the wheat growing for some time yet. I would estimate that less than fifty per cent of the intended fall acreage has yet been sown. Many farmers are still "combining" their spring-sown wheat.

Visitors at the station during the last two weeks were Director F. B. Linfield, Prof. Clyde McKee and Prof. Harrington of the Montana Experiment Station; Mr. R. A. Oakley and Mr. H. L. Westover of Forage Crop Investigations; and Mr. J. H. Martin of our Office.

State College of Agriculture, Bozeman (Barberry Eradication, H. E. Morris) No report.

WESTERN BASIN AND COAST AREAS
(North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (L. C. Archer). No report.

OREGON

Sherman County Branch Station, Moro (L. E. Stephens). (Oct. 4) The weather here remains dry and we have not yet had sufficient rain to make the sowing of winter wheat safe. Wheat sown three weeks ago has not yet emerged except in a few spots. We are hoping that we shall get a rain soon so that we can get our winter wheat varieties up good before cold weather.

CALIFORNIA

Rice Field Station, Biggs (J. W. Jones). (Sept. 29) The station rice is ripening quite fast. All the plats have been drained with the exception of five late varieties and the nursery. Just as soon as the ground is dry enough

we will start harvesting. The crop on the Station, except for the nursery, looks better than it has for the past two years. While our yields will not be high, indications are that they will be reasonably good.

Most of the rice farmers have quit taking water and quite a large number of them have drained their fields preparatory to harvesting. In about ten days the rice harvest throughout the valley will be pretty well under way, providing the weather continues favorable.

Plant Introduction Station, Chico (V. H. Florell). No report.

Agricultural Experiment Station, Davis (F. M. Briggs). No report.

Agricultural Experiment Station, Berkeley (W. W. Mackie). No report.

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CEREAL COURIER

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 October 20, 1921 No. 26
Personnel (Oct. 10-20) and Field Station (Oct. 1-15) Issue.

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PERSONNEL ITEMS

Carl W. Bower, field assistant in agronomic phases of corn disease investigations being conducted at the Kansas Experiment Station, completed his season's work on October 12.

Dr. G. N. Hoffer, in charge of corn root and stalk rot investigations at the Purdue University Agricultural Experiment Station, was in Washington for conference on October 10.

John A. Hooker, of Ohio, was appointed laboratory aid effective September 29, for service in our Cereal Laboratory.

Merle T. Jenkins, who had been assisting Mr. Richey in harvesting his corn plats at Burdette, Ark., returned to Bloomington on October 12.

Dr. D. F. Jones, in charge of plant-breeding investigations at the Connecticut Agricultural Experiment Station and collaborator of this office, arrived in Washington on October 15 from a round-trip of the agricultural experiment stations in the corn belt, during which he studied for this office the corn-breeding program under way in each of the States.

Edwin J. Kohn, temporary assistant in investigations of corn root, stalk, and ear rot diseases being conducted by this office at Purdue University Agricultural Experiment Station, completed his season's work on September 30.

C. H. Kyle completed the harvest and note-taking of the corn-breeding experiments conducted at the Pee Dee Substation, Florence, S. C., and returned to Washington on October 4.

F. D. Richey completed the harvesting of his corn experiments at Burdette, Ark., and returned to Washington on October 13 to harvest his plats on Arlington Farm.

Warner F. Robling, field assistant in the chemical investigation of corn diseases being conducted by this office at Purdue University Agricultural Experiment Station, completed his season's work on September 30.

Amelia Shropshire was appointed effective October 17, as typist on the temporary roll of the Bureau, to assist with the work of this Office.

Hugo S. Stoneberg, who has been in charge of cooperative investigations at the Pee Dee Experiment Station, Florence, S. C., during the season, returned to Washington on October 4 to assist in harvesting extensive experimental plats at Arlington Farm.

William P. Walker, a graduate in the 1921 class of the University of Maryland, was appointed effective October 10, to assist in the cereal disease investigations being conducted by this Office at Arlington Farm.

MANUSCRIPTS AND PUBLICATIONS

Page proof of Circular No. 188, entitled "Progress of Barberry Eradication," by Dr. F. E. Kempton, was read on October 13.

The first edition of Department Circular 193, entitled "Fulghum Oats," by T. R. Stanton, was issued on October 14.

Department Circular No. 194, entitled "Kanred Wheat," by J. Allen Clark and S. C. Salmon, was received from the Government Printing Office on October 17.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens, and Substations (R. R. Childs). No report.

SOUTH CAROLINA

Pee Dee Substation, Florence (Hugo Stoneberg). No report.

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor). No report.

NEW YORK

Cornell University Experiment Station, Ithaca (H. H. Love). No report.

Rhinebeck (Corn Investigations, L. S. Mayer). (Oct. 15) The harvesting of the experimental field corn plats was begun September 26. The first four days were spent in the varietal field where one replication was harvested and recorded entirely: i.e., total stalks, barren stalks, yield, number of ears, etc. On the other replications notes were taken with especial reference to storm resistance of the several varieties. The breeding field of U. S. No. 193 was begun next, and the harvesting and note-taking continued there until October 12. Hanging the corn has occupied several days as has also the harvesting of the two increase plats of Dr. Jones' double-crossed corns. Another week will finish the general selection of seed corn on the farm. The season has been exceptionally favorable to the maturing of the corn, the first frost

occurring on the night of October 14. As a result the general seed corn on the farm this year will be as fine and sound a lot as we could wish for.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Crowley Rice Station, Crowley (J. Mitchell Jenkins). No report.

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler). No report.

IOWA

Iowa State College, Ames (Barberry Eradication, R. R. Porter). No report.

Agricultural Experiment Station, Ames (L. C. Burnett). No report.

ILLINOIS

State Entomology Building, Urbana (Barberry eradication. L. F. Tenon). The results obtained from the barberry eradication campaign in Illinois for the month of September show that 1,785 bushes were located on 172 properties, and 1,329 bushes were removed from 194 properties. Of these 55 were escaped bushes located on 15 properties. A total of 504 bushes was found on 41 country properties.

September represents almost the end of the active field season in Illinois all of our field assistants having resigned on or before the 20th.

The survey for barberry through very nearly eight counties in Illinois is now complete. We are particularly glad to report that this includes the "North Shore" towns along Lake Michigan, north of Chicago to the Wisconsin border.

The following tabulation is a summary of the office and field work for the month:

Letters received	105
Letters written	137
Barberry post cards	186
Farmers' Bulletin No. 1058	241
Separate No. 756, United States Department of Agriculture Year Book	14
Eradication posters sent out	31
Demonstrations	3
Telegrams	27
State Inspection Act	140
State Barberry Regulation	30
Reports	2
Miles traveled by automobile	3015
Talks to individuals	323
Red tags used	285

Funk Brothers Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert). (Oct. 15) Harvest progressed rapidly during the past two weeks. Field weights have been obtained on approximately half of the twenty-five hundred individual plats of inoculated or naturally infected corn.

Open mesh bags were used to keep the yields from each plat separated and to prevent further moulding. The corn has now been placed ready for treatment by artificial heat to reduce it to air dry weight. Each yield will then be classified into marketable and unmarketable corn, the latter grade consisting of rotted ears, partly rotten ears, small nubbins, and chaffy ears. The sound corn will be shelled, moisture content determined, and acre yields reduced to a uniform moisture basis.

There is much rotten corn this year mainly due to secondary infections by Fusarium moniliformae following the ravages of the corn ear worm and to ear rots caused by Diplodia zeae. The season has been unusually favorable for infections by the latter organism. Selections of Reid's yellow dent from this locality and from other places in Illinois are showing wide variations in susceptibility to ear rots.

Mr. S. D. Fessenden of the Bureau of Crop Estimates in speaking of Illinois corn conditions among other things, says "Barren stalks are found unusually common, and badly filled ears are making great inroads into the individual estimates of farmers on their own crops." The organism connected with this type of trouble has been isolated in great abundance this year and is probably responsible to an appreciable extent for the numerous barren stalks and stalks producing nubbin ears. Harvest data taken on 1740 stalks inoculated with this organism show approximately 25% reduction in the total field weights. The data also show that certain varieties of dent and sweet corn are much more susceptible to this malady than others. Data taken on 5,000 stalks receiving injections of distilled water when they were about a foot high by means of an hypodermic syringe show that the yields are not reduced by this procedure. It is too early to give other significant results arising from this year's experiments.

INDIANA

Purdue University Agricultural Experiment Station.

(Corn Root, Stalk, and Ear Rots, G. H. Hoffer). No report.

(Leaf Rust Investigations, H. S. Jackson and L. B. Maine). No report.

Purdue University College of Agriculture (Barberry Eradication, R. J. Hosmer). No report.

OHIO

College of Agriculture of Ohio State University, Columbus (Barberry Eradication, John W. Baringer). No report.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Ready). Field work being done by temporary assistants was brought to a close October 1. Naturally we had expected to survey more territory and thus secure an area, within a surveyed area, sufficiently removed to greatly lessen the chances of grain being infected with bushes growing in territory which had not been surveyed. Then, when one found a rusted field, he would know that he had a more careful survey to make over territory that he had already covered. This would take away his old alibi that any infection found must have come from bushes in territory not surveyed. The vast majority of farmers will tell you that there are no bushes in their vicinity, and probably you have not found any in your survey, so you are inclined to agree with them. It surely will be great when a sufficiently large area is completed that we can start from a rusted grain field, if we must have rust, and from the spread of the infections locate the bush.

The following counties were surveyed during the summer: St. Joseph, Cass, Wayne, Washtenaw, Jackson, and over three-fourths of Calhoun County. An average of forty rural locations a county was found, and over thirty thousand bushes were found. We now have eleven counties surveyed and in these areas we have eight locations only which contain bushes.

With Detroit in Wayne County, we expected to find many bushes around the suburban homes and about the small farms close in, but the number of bushes found in Wayne County was no comparison with the numbers found in either Washtenaw or Jackson Counties. In Jackson County, near the railroad stop of Wheelerton, forty acres of pasture land were peppered with bushes. Four men with three teams spent four days pulling the large bushes. The owner with two hired men has spent considerable time since in pulling seedlings and smaller bushes. They promise to take out every bush even though they need to leave their field work next summer. In the early fifties, a Mr. Tyler settled upon a section of land, a part of which is the pasture containing the bushes. About his house he planted a four-rod hedge of barberries. This hedge was allowed to stand thirty years and then removed. There is not a sign of the original hedge at this time, but it has left evidences of having produced most bountiful crops of berries. The farmers in this vicinity take it as a natural course that they will have considerable rust in their grains. It has been with them so long that it is difficult for them to understand that they can get help by taking out the bushes they have seen all their lives.

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson). No report.

Department of Agriculture, State Capitol, Madison (Barberry Eradication, Noel F. Thompson). No report.

MINNESOTA

College of Agriculture, University Farm, St. Paul (Barberry Eradication, Leonard W. Melander). No report.

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman). No report.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger). (Oct. 15) The dry weather of September has continued thus far in October. There have been some very windy days. Several light frosts have occurred but no killing frost to date.

Most of the harvesting has been done; only some of the later date plats remain to be harvested. The last two weeks have been spent in harvesting hybrids and taking notes on same, and getting in seed heads from the sorghum and broomcorn nurseries.

Maximum temperature for the first half of October was 95° on the 6th; minimum for the same period, 35° on the 12th. Precipitation, 0.

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker). (Oct. 4) The weather during the first week in September was unseasonably warm and many of the central and western counties were in need of moisture, but showers fell occurred over most of the eastern third of the State. Sowing wheat was under way in the western third of the State, and broomcorn planting is in full swing in the southwestern counties.

During the second week soaking rains that totaled from one to three inches or heavier fell over most of Kansas, putting the ground in splendid shape for wheat seeding except in some of the central counties where the long continued drought was still evident. Sowing wheat was general over the western half of the State with as much as 30 per cent sown in some of the northwestern counties.

During the third week in September from one to two inches of rain fell over most of the northern half of the State, and in some counties the total rainfall was between two and four inches. Temperatures for the week were about normal. Corn cutting was practically finished in all parts of the State, and from 60 to 75 per cent of the grain and forage sorghums were cut. Wheat sowing was about half finished in the northwestern counties and 5 to 20 per cent done in the central portion of the State. In some of the central counties there is not sufficient moisture for germination.

During the fourth week in September temperatures were a little above normal, and soaking rains fell over the eastern half of the State. Light frosts were reported in the northwestern counties toward the end of the week. Almost every county in the State except a few in the central portion, reports the ground in good condition for wheat seeding. From 50 to 75 per cent of the wheat was seeded in the western half of the State, some counties reporting as high as 90 per cent completed.

Seeding wheat in the fields and experimental plats at the Agronomy Farm was completed during the week ending October 1. About 4,000 replicated rod rows and single rod rows were sown in the nursery on September 30 and October 1. All of the corn varieties and corn disease experimental plats have been cut or husked out in the field. Mr. Bover will obtain dry weights on the ears harvested from these plats, and a little later will make selections of ears to be tested on the germinator and continued in next year's experiments. All of the sorghum varieties and hybrids, including a rather large number of selections and hybrids used in a study of heterosis, have been cut and selections made.

Visitors at the station during the month were Dr. D. F. Jones, Plant Breeder at the Connecticut Experiment Station, who was here from September 24 to 26. Dr. Jones looked over the cooperative experiments in corn breeding and corn disease investigations in the Departments of Botany and Agronomy, and gave a talk to those interested in genetics and plant breeding on the corn breeding experiments at the Connecticut station. While at the college Dr. Jones was initiated into Phi Kappa Phi.

Dr. N. I. Vavilov, Director of the Bureau of Applied Botany and Plant Breeding at Petrograd, Russia, was here on September 29 and 30. Dr. Vavilov was invited to attend the cereal pathology field meetings at St. Paul in July, but failed to reach this country in time for the meetings. He is now making a tour of the experiment stations and is especially interested in problems of disease resistance and immunity in cereal crops.

Dr. H. H. Love, Professor of Plant Breeding at Cornell University, will spend the week of October 31 at the college and will give a series of lectures on biometrical subjects for the members of the Experiment Station staff.

On October 4 Prof. L. E. Call attended a meeting in Chicago of the committee of agronomists appointed by the International Hay and Grain Show to perfect plans for this year's program and exhibitions.

The Kansas Crop Improvement Association has arranged for the field inspection of seed corn. It is planned to inspect the corn in the field, getting information on purity of the variety, freedom from disease, maturity, and other important characters which can best be judged in the field, and later to make a second inspection of the ear corn in the bin or crib, this to be followed by a germination test. This year this work is being done only on four farms: those of Mr. C. C. Cunningham of ElDorado, B. S. Wilson of Keats, Fred Lepted of Lawrence, and Mr. J. Brooks. All these men are officers in the Kansas Crop Improvement Association and will assist in perfecting plans for the more extensive work which it is planned to do next year. Professors Salmon and Parker are doing the inspection work this season.

Mr. Parker will spend most of the month of October in St. Paul and Minneapolis attending the Alpha Zeta Conclave and on vacation. He will return to Manhattan via Chicago and Bloomington, Ill., the last of October.

The enrollment at the College is about 2,600, a slight increase. There are noticeably fewer freshmen registered in the Division of Agriculture than in Engineering. In fact, the total enrollment in the Division of Agriculture is just 55 per cent of that in Engineering.

The average maximum temperature for September was 87.43°, the average minimum temperature was 62.73°, and the average mean temperature was 75.08°. Measurable precipitation fell on September 2, 3, 4, 11, 12, 17, 19, 23, and 24, being .11, .52, Trace, .12, 1.06, .35, .29, Trace, and .7 inches, respectively.

Hays Branch Station, Hays (A. F. Swanson). (Oct. 17) We are having a pleasant but a dry fall, with no rainfall since early in August. Wheat is making out little progress, and where it was sown on a poor seed-bed it has not yet germinated. The lack of fall growth is likely to leave the fall-plowed fields in a condition to blow next spring.

Sorghum threshing was completed on October 8 under very favorable circumstances. The bulk of the field work was completed on October 14.

Not all of the yields of the grain sorghums have been calculated yet, but Dwarf White milo will probably be the high-yielding variety at 37 bushels to the acre. The average yields of the grain sorghums will run between 33 and 40 bushels. The season as a whole was favorable for the sorghum crop.

COLORADO

Agricultural College, Fort Collins (Barthery Breakfield, C. D. Lyon Col.). No report.

Akron Experiment Farm, Akron (F. A. Coffman). (Oct. 16) The first half of October has been very warm and dry at Akron. No precipitation of any value has been received since early in September. Early sown winter wheat is dying from lack of moisture and very little of the late sown wheat has germinated.

As a result winter wheat prospects in this section are far from promising. The season is so far advanced that most likely any precipitation coming now would be in the form of snow.

While weather conditions have been very unfavorable to winter wheat, they have been very favorable for the rapid completion of fall work. During the first half of the month the sorgo and millet plats were thrashed, the fall seeding was completed, and about half of the experimental corn was husked. Two or three days' work will finish the field work for the year on the different cereal projects. Considering that 1921 stands out as one of the most drought seasons in the history of Akron Field Station, the year's results have been comparatively favorable.

Considerable time has been spent the past week in making corn selections. All of our seed is being selected from the standing stalks in the field. We hope to reduce the percentage of corn smut by this method. The percentages of smut in our various varieties and selections is so great in many cases as to be almost unbelievable. Many rows show between 40 and 50 per cent of smutted stalks. This is true of the varieties being grown at Akron from imported seed, as well as from our own varieties. A few of the strains which showed low percentages of infection in 1920 are giving some slight promise by having comparatively low percentages of smut infection this season.

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel). (Oct. 16) With the opening of the University, September 16, four of the field men resigned to continue college work. Two squads will continue work during October and November. During the month of September, 668 barberry bushes were found on 26 properties. Barberries were found on the average of 10 to 12 farms per county. The work in Fillmore and Hamilton Counties shows that barberries were more heavily infected there than in the eastern and northern counties. This was also observed earlier in the season. However, this was not a bad rust year, and very little damage was done to cereals on account of the rust. The spread of rust from barberries to grains was studied in two cases. The first rust infection on winter wheat near infected barberries was on May 20. At this time there was no rust on any of the cereals in the State. A week from this date the rust had spread three hundred feet into the winter wheat field. On May 27 no rust could be found except near infected bushes. A trip was made at this time into the southern counties of the State, and it was impossible to locate a single pustule of rust in any of the southern counties. On June 5 stem rust became general throughout the State, and a trace of it could be found in every field where the host conditions were favorable for infections. Rust had spread from barberries fifteen days before the rust came in from the South. This information has been a great help in getting farmers to remove their bushes this year.

Barberries are running wild in Nebraska. The wild barberries in some cases are being established along the roads near the grain fields. There is always available black spore material under the fences along the roads to infect these escaped barberries in the spring. Being established near the fields, rust spreads early to the cereals. The escaped barberries furnish good arguments for the removal of the bushes at this time before they run wild in great quantities. The owners of barberries are beginning to realize that we mean business, and are taking out their bushes. Since January 1 we have taken out about 24,000 bushes without a single sheriff's order.

WYOMING

Cheyenne Experiment Farm, Cheyenne (A. L. Nelson). No report.

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, Ralph U. Cotter). No report.

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, Lynn D. Hutton). No report.

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (F. E. Brentzel). No report.

State College of Agriculture, Agricultural College (Barberry Eradication, George C. Mayoue). No report.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.). (Oct. 17) During the first half of October, temperatures have been mild and precipitation low.

A considerable portion of the flax from the nurseries still remains to be thrashed. Yields are very low, even from the clean cultivated nursery rows. From the majority of rows thrashed to date, yields of seed were less than the amount of seed sown.

Maximum temperature for the first half of October was 84°, recorded October 5; minimum, 24°, recorded October 11; precipitation, 0.12 of an inch.

Dickinson Substation, Dickinson (Ralph W. Smith). (Oct. 15) The weather has been dry during the past month, very little precipitation having fallen since the middle of September. Very little fall plowing is being done on account of the dry condition of the soil. Winter wheat and rye varieties at the Substation are in fairly good condition but are needing rain.

The cleaning and weighing of nursery varieties is completed, and the cleaning of plat varieties is in progress.

Considerable interest is being manifested in dairying and diversified farming in this section. There is talk of organizing a holstein breeding circuit and a potato growers' organization in this locality.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May). (Oct. 12) We are approaching the end of the busy season. We finished thrashing the spring nursery this morning. The seeding of the fall wheat nursery was completed October 8. The storing of a large amount of grain and the spreading of straw on the furrow drill strawmulch plats are yet to be done, however.

Fall wheat which was sown early is in fine condition. There is still an abundance of moisture to keep the wheat growing and to germinate any wheat which is sown late. All of the fall wheat on the Station farm has been sown, but a few farmers in this neighborhood have not begun yet. A few farmers are still combining wheat but almost all of the crop has been harvested. We have had unusually nice weather the past two weeks, which has been a great boon for this section.

The furrow drill experiment results will appear in the next issue of the Courier.

Preliminary Report of Grain Yields at the Judith Basin Substation for 1921 (more careful checking of the data for the annual report may cause some changes):

Winter Wheat, Replicated Plats

Variety	C.I.No.	Acre yield in bus.	Variety	C.I.No.	Acre yield in bus.
Kharkov	1583	16.3	Minturki	6155	15.6
Karmont	6700	19.9	Blackhull	6251	8.5
Kharkov (Mont. 36)	5549	16.7	Minnardi	5145	15.2
Kanred	5146	14.8	Buffum No. 17	3330	15.7
Turkey	1558	14.5	Kanred X Marquis (bulk seed)		1.8

Spring Wheat, Replicated Plats

Marquis	3641	28.3	Kubanka	1440	27.2
Rudy	6047	20.2	Power	3697	25.4
Red Bobs	6255	30.8	Arnautka	4064	22.9
Early Baart	1697	30.6	Haynes	2874	22.1
D-5	3322	25.5	Golden Ball*	6227	20.8
Early Red Fife	4932	24.7	Kubanka (N.D.98)*	6519	22.1
Kota	6248	28.3	Monad*	3320	26.3
Monad	3320	27.4	-----**	3774	20.8
Peliss	1584	27.0	-----*	3727	30.0
Acme	5284	28.7	Kanred X Marquis (bulk seed)*		16.3
Kahla	5529	19.2	Quality*	6607	20.8
Norka	4377	31.7	Canadian Marquis*		31.7
Hard Federation	4733	32.2	" " *		31.7
White Federation	4981	32.9	Spring Rye*		29.2
Federation	4734	31.3	Ladoga*	6679	25.0
Preston	3081	25.8	Ladoga*	6679	28.3
Kitchener	4800	27.9			

Barley, Replicated Plats

Hannchen	531	52.0	Svannals	187	50.2
White Smyrna	910	48.6	Francomian	680	48.5
White Smyrna	195	39.2	Nepal*	555	39.6
Coast	690	44.1	Manchuria*	554	39.6
Himalaya	620	42.9	Horn*	926	52.1
Mariout	261	44.2	Hannchen**	531	37.0
Meloy	1176	44.0	Six-Row July**	---	30.2

* Single Plats
** Single plat and sown about one month later than other varieties.

Variety	C.I.No.	Acre yield in bus.	Variety	C.I.No.	Acre yield in bus.

Oats, Replicated Plats

Alpion	729	52.9	Lincoln	738	57.7
Sixty-Day	165	55.1	Banner	761	61.3
Sixty-Day	165-4-F-4	55.4	Victory	742	59.4
Richland	767	57.2	From Siberia*	829	48.4
Nebraska No. 21	641	55.0	From Siberia*	749	59.4
Swedish Select	134	55.8	From Siberia*	828	61.7
Danish	441	56.4	From Fr. Eq. Is.*	817	68.0
Dakota No. 4	755	57.0	From Russia*	710	70.3
Silvermine	714	56.6			

Flax, Replicated Plats

Montana Common	6	3.7	Primost	47	4.4
N.D.R. No. 52	8	4.3	N.D.R. No. 114	15	5.4
Dakota	3	5.9	Reserve (Russian)	19	5.8
N.D.R. No. 73	14	5.9	Fargo Common	18	5.6

* Single plat.

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CEREAL COURIER

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 October 31, 1921 No. 27
Personnel (Oct. 21-31) and Project Issue.

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PERSONNEL ITEMS

Dr. C. R. Ball has been appointed a member of the Department Yearbook Committee and chairman of the Subcommittee on Wheat.

C. W. Warburton has been appointed a member of the Department Yearbook Committee and chairman of the Subcommittee on Corn.

Arthur W. Henry, field assistant since May 1 in connection with rust epidemiology studies being conducted at St. Paul, Minn., resigned October 20 to continue his postgraduate studies at the University of Minnesota.

Miss Sue H. Mason, stenographer at the headquarters of the barberry eradication campaign in Minnesota, resigned October 17 to resume her studies at the University of Minnesota.

Emil H. Ostron, field assistant in barberry eradication in Minnesota, completed his season's work on October 31.

Mrs. Florence Smith Sutton, assistant pathologist in leaf rust investigations, stationed at Lafayette, Ind., resigned effective September 30.

Waldo M. Winters was appointed effective October 27 as clerk (S. & T.) to assist Mr. Holbert in the corn rot investigations being conducted at Bloomington, Ill.

VISITORS

Prof. L. A. Fitz, head of the Milling Department of the Kansas Agricultural College and Station, who was engaged in the investigation of the factors affecting spring wheat grades for the Bureau of Markets during the fall, was a visitor on October 26.

Director S. B. Haskell of the Massachusetts Agricultural Experiment Station was a visitor on October 22, in the interests of a paper he is preparing on Instruction in Farm Crops.

Dr. L. R. Jones was an office visitor October 20 to confer on matters of cereal-disease interest.

Mr. H. E. Roethe of the Bureau of Chemistry, who assisted in the installation of smut- and dust-collecting fans for experimental use in southeastern Washington, has returned after an absence in the field of over three months. He reports the development of wide interest in the smut fans, and has information to show that in all cases where these fans have been properly installed they have proven an effective preventive of separator explosions and fires.

Dr. N. I. Vavilov, Director of the Bureau of Applied Botany and Plant Breeding in Petrograd, who has been visiting experiment stations in the United States for several weeks, was again an office visitor on October 31 to confer with our specialists on plant breeding subjects and on seed supplies for the famine-stricken area in Russia.

Dr. Julius B. Weems, chemist in charge of food and fertilizer control for the Virginia State Board of Agriculture, was an office visitor on October 26.

MANUSCRIPTS AND PUBLICATIONS

A manuscript entitled "The Influence of Soil Temperature and Moisture on the Development of the Seedling Blight of Wheat and Corn Caused by Gloerella Saubinetii (Mont.) Sacc.," by James G. Dickson, Assistant Professor of Plant Pathology, University of Wisconsin, and pathologist in this office, was submitted on October 29 for publication in the Journal of Agricultural Research.

A manuscript entitled "The Relation of Character of Endosperm to Susceptibility of Dent Corn to Root Rotting," by John F. Trost, Assistant Pathologist of this Office, in cooperation with the Purdue University Agricultural Experiment Station, was submitted on October 22 for publication as a Department Bulletin.

"Notes on Willows of Sections Pentandrae and Nigrae," by Carleton R. Ball, appeared in the October 15 issue of the Botanical Gazette.

L. W. Durrell, formerly an Agent in this Office, and John H. Parker, Agent, are authors of Research Bulletin No. 82 of the Iowa Agricultural Experiment Station, entitled "Comparative Resistence of Varieties of Oats to Crown and Stem Rusts." The studies reported in this paper were begun in 1914 under a cooperative agreement between the Department of Agriculture (Office of Cereal Investigations) and the Department of Botany of the Iowa Agricultural Experiment Station.

Page Proof of "Ash Content of the Awn, Rachis, Palea, and Kernel of Barley during Growth and Maturation," by H. V. Harlan and Merritt L. Pope, was read October 21.

The paper entitled "Aecial Stage of the Orange Leaf Rust of Wheat, Puccinia Triticina Erikss.," by H. S. Jackson, Chief in Botany, and R. B. Mains, Associate Botanist, Purdue University Agricultural Experiment Station, and Agents of this Office, was published in the October 15 issue of the Journal of Agricultural Research.

Page proof of an article entitled "Genetic Behavior of the Spelt Form in Crosses between Triticum Spelta and Triticum Sativum," by Clyde E. Leighty of this Office and Sarkis Boshnakian of Cornell University Agricultural Experiment Station, was read October 22. This will be published in the Journal of Agricultural Research.

C E R E A L C O U R I E R

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 November 10, 1921. No. 28.
Personnel (Nov. 1-10) and Field Station (Oct. 16-31) issue.

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PERSONNEL ITEMS

Dr. C. R. Ball has been appointed chairman of the Department Wheat Committee engaged in the preparation of matter for the 1921 yearbook. Dr. Leighty, also, is a member of this Committee.

Marshall A. Boyd, field assistant in barberry eradication in Iowa, completed his season's work October 31.

Mr. F. A. Coffman, in charge of cereal investigations, at the Akron Field Station, Akron, Colorado, has gone to Manhattan, Kansas, where he will continue his genetic studies on Burt oats with Professor Parker during the winter.

Rudolph S. Frigstad, field assistant in barberry eradication in North Dakota, completed his season's work October 31.

Dr. C. E. Leighty has been appointed a member of the Wheat Committee engaged in the preparation of matter for the forthcoming yearbook. In the absence of Mr. Warburton, he has been named Acting Chairman of the Corn Committee for the same purpose.

Ryah B. Locke, field assistant in barberry eradication in South Dakota, completed his season's work October 31.

Miss Eunice R. Oberly, Librarian of the Bureau of Plant Industry, passed away November 5 following a short illness.

Dr. Arthur S. Rhoads, formerly of the Office of Investigations in Forest Pathology, was transferred, effective November 1, to the Office of Cereal Investigations, to take up his duties as laboratory and field assistant in cereal-disease investigations.

Mr. A. F. Swanson, in charge of cereal investigations, at the Hays Branch Station, Hays, Kansas, has gone to Manhattan, Kansas, to continue his genetic studies on sorghum.

The temporary appointment of Bruce J. Thornton, field assistant in barberry eradication in Wyoming terminated November 4.

C. W. Warburton has been appointed chairman of the Departmental Cover Committee engaged in the preparation of the matter for the forthcoming yearbook. Until his return, Dr. Leighty will be Acting Chairman.

Herbert H. Zimmerman, field assistant in barberry eradication in North Dakota, completed his season's work October 31.

VISITORS

Dr. N. I. Vavilov, Director of the Bureau of Applied Botany and Plant Breeding in Petrograd, has been in consultation with the Cereal Investigations staff during the past several days.

MANUSCRIPTS AND PUBLICATIONS

A manuscript entitled "The Water Content of Barley Kernels During Growth and Maturation, "by Harry V. Harlan and Merritt N. Pope was submitted, on Nov. 3, for publication in the Journal of Agricultural Research. This is the fifth paper in the series on the physiological factors affecting the development of the barley kernel.

FIELD STATION CONDITION AND PROGRESS.

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens, and Substations (R.R.Childs.) No report.

SOUTH CAROLINA

Pee Dee Substation, Florence (Hugo Stoneberg). No report.

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor). (Oct. 15-31.) The prolonged dry weather of the fall was broken on the last two days of the month when rains totaling .80 inches (to 8 a.m. Nov. 1) were recorded at Arlington Farm. The previous precipitation for October was .72 inches making a total for the month of 1.52 inches or a deficiency from the 10 year October average of 1.76 inches. The shortage of rainfall induced irregular germination of all cereals sown during October. Spelt, emmer and barley sown from Oct. 4 to Oct. 10 are still germinating.

The plats of the electrically treated seed wheat experiment were sown on Oct. 24, and the last seeding in the rate and date of seeding experiment was made on Oct. 29. With the exception of a small increase section this completes the fall seeding, which has been more extensive than usual.

Wheat sown the latter half of September contains a small percentage of leaf rust, but in the varietal plats of wheat and rye sown Oct. 7 and [illegible] rust has yet been observed.

Maximum temperature for October - 79
Minimum temperature for October - 31

(Oct. 1-15) The seeding of the varietal plats has been completed. Barley was sown Oct. 1 and wheat Oct. 7 and Oct. 10. The fall stand of oats is good as is that of wheat and rye, but the barley stand is as yet poor, due in main to the lack of rainfall since seeding. An especially poor stand exists in the barley plats employed in the testing of different chemicals for smut control as they were sown on a particularly well drained section. Plat experiments on some of the cereal smuts has been increased this year. The comparative worth of formaldehyde, copper carbonate and chlorophol is being tested on controling the smuts of oats. On barley the same chemicals are used and in addition hot water treated seed; while on wheat, for controling bunt, seed treated with formaldehyde, copper carbonate, chlorophol and copper sulphate and lime has been planted.

The cereal nurseries have all been planted. A hand marker for spacing individual seeds has been constructed by Mr. Sands which greatly aided this phase of the work.

The yield of the varietal wheat plats for 1920 -1921 was as follows:

Variety	C.I.No.	Bu per Acre.	Variety	C. I. No.	Bu per Acre
Fulcaster	6162	24.5	Poole	[illegible]	23.6
Bearded Purple Straw	1911	23.6	Red Rock	5970	23.0
Lancaster	1945	22.5	Poole	1979	23.0
Dawsons (Cornell Sel)	6161	21.7	Leap	4823	21.7
Purple Straw	1915	19.8	Purple Straw	1957	20.2
Brown Winter Fife Sel. from	1933	19.5	Dietz	1981	21.0
Rocky Mountain	1930	18.8	Mammoth Red	2008	19.5
Tenn. Fultz	6163	18.7	China	180	[illegible]
Beaded Purple Straw	1911-1	18.2	Stoner	2980	[illegible]
" " "	1912-2	18.1	Poole Type	1753	18.7
Red Row 294		17.0	Kanred	5146	18.6
Currell	[illegible]	16.4	Early Dawson Giant	[illegible]	[illegible]
Mo. Bluestem	1912	16.[illegible]	Red Row 62		[illegible]
3115 - 2		[illegible]	Hybrid	[illegible]	[illegible]
New Amber Longberry	1975	14.4	Fultz	[illegible]	16.4
Nebraska Hybrid	5147	12.8	Red Row 959		[illegible]
Hybrid	5608	11.8	Illini Chief	[illegible]	[illegible]
Red Row 676		[illegible]	Power Fife	[illegible]	[illegible]
			Fultz	1925	[illegible]
			Haynes Bluestem	2874	12.7

The yields are the average of [illegible] 1/40 acre plats with the exception of Purple Straw C. I. 1915, the check. The yield in this case represents the average of twenty seven [illegible] acre plats.

NEW YORK

Cornell University Experiment Station, Ithaca (H.H. Love). No report.

Rhinebeck (Corn Investigations, L.S.Meyer). No report.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Crowley Rice Station, Crowley (J. Mitchell Jenkins). No report.

MISSOURI

Agricultural Experiment Station, Columbia (L.J.Stadler). (Oct.31,1921) The weather during October was on the whole favorable for drying out corn and for sowing wheat, which had been delayed beyond the usual time by wet weather in September. The corn crop all over the state is fully matured and cribbing has begun. Except for some damage from September rains the condition of the crop is very good and yield is well above average. Wheat sowing was completed by about the 25th of the month. Rather hasty preparation for wheat was necessary in some localities, particularly in central and northeastern Missouri, but as a whole the condition of the wheat is now satisfactory.

The yields of barley varieties at Columbia during 1921 are shown in the following table. Each yield represents the average of ten distributed rod row plats.

Variety	C. I. No.	Average Yield in Bushels per Acre.
Sandrel	937	39.61
Trebi	936	39.49
Oderbrucker B35		37.64
Franzish	933	35.13
Featherston	1120	35.11
Manchuria	956	33.24
Lion	923	32.30
Odessa	927	30.75
Success B32		27.18
Summit	929	26.38
Luth	908	21.16

These varieties with the exception of Oderbrucker B35 and Success B32 were obtained from Dr. Harlan in 1919. In each of the three seasons they have been compared, Sandrel and Trebi have been the leaders in yield.

The importance of earliness of maturity in determining the yield of oats in this section, is well brought out by the following table showing the yields of all varieties of oats grown in the varietal experiments on the station field during the last three seasons. In each season the period from the date of maturity of the earliest to that of the latest variety was divided into four equal parts and the average yield of the varieties maturing in each of these four periods was determined. The varieties were grown in four distributed five-row blocks in 1919 and 1921, and in ten distributed single rows in 1920.

Season	No. of Varieties	Average Yield			
		Early	Medium early	Medium late	Late
1919	40	61.60	50.20	47.50	24.40
1920	53	39.07	34.74	30.62	22.06
1921	32	42.79	31.00	26.06	22.39
Average		47.82	39.65	34.66	22.95

IOWA

Iowa State College, Ames (Barberry Eradication, R. H. Porter) No report.

Agricultural Experiment Station, Ames (L. C. Burnett) No report.

ILLINOIS

State Entomology Building, Urbana(Barberry Eradication L. R. Tehon.) No report.

Funk Brothers Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert) No report.

INDIANA

Purdue University Agricultural Experiment Station.

(Corn Root, Stalk, and Ear Rots, G. N. Hoffer). Mr. John Trost is at Wanatah, Indiana completing the harvesting of the experimental plats.

Mr. B. H. Duddleston has just returned from Columbus, Greenfield, Monticello, and Shelbyville, Indiana where the fertilizer plats were harvested last week. Mr. Duddleston reports much damage to the ears caused by ear worms, Diplodia and Fusarium. At Monticello over 20 per cent of the ears from the experimental plats were unmarketable. At Shelbyville approximately 25 per cent were injured.

A further survey of fields in vicinity of Lafayette show continued high averages of unmarketable corn, several fields having as much as 25 per cent of the ears unfit for use. The farmers are much interested in the problem as to whether the damaged ears can be used for feeding cattle.

(Leaf Rust Investigations, H. S. Jackson and E. B. Mains). No report.

Purdue University College of Agriculture (Barberry Eradication, R. J. Hosmer). During this past month very little original survey work has been carried on but a number of locations have been checked up for barberries. In two cases in the southern part of the state severe outbreaks of black stem rust were found a short distance away. It is interesting to know that while there was a light scattered infection of black stem rust over the southern counties of Indiana this past year still there were no serious attacks of black stem rust, which came to our attention, in which common barberries were not later found in the vicinity.

At the present time we are attempting to gather definite information from former rural owners of common barberries as to the amount of rust which was appearing previous to the removal of the bushes and the amount and damage caused by the rust since the removal. We are expecting some very definite and interesting information from these questionnaires.

OHIO

College of Agriculture of Ohio State University, Columbus(Barberry Eradication, John W. Berringer) (Nov. 1) The state leader worked alone during October. One fourth of Fulton and one-fourth of Lucas counties were covered by an original farm-to-farm survey. Small towns in this area were also surveyed. Considerable resurvey was done in Lucas, Fulton, Henry, Montgomery and Williams counties.

In the original survey for October 62 plantings containing 273 barberry bushes were found. Of this number 50 plantings containing 147 bushes were removed.

The rural survey of Lucas county is three fourths completed. When it is finished, fifteen counties in northern and western Ohio will have been completely covered by an original survey.

The subject of barberry eradication has been given much excellent publicity by the Ohio newspapers during the summer of 1921. It is very unusual to approach a resident of this state and find that he has neither read nor heard of barberry eradication.

On the whole, opposition to our work is decreasing but occassionally obstinate individuals are encountered.

An attorney of Bryan, Ohio, maintains that the "Ohio Plant Pest Law," is insufficient when it comes to enforcing the destruction of shrubberry. He has promised to support his views by making a test case in defense of his barberries.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W.F.Reddy) (Nov. 1.) Since October first, when all field assistants left the work, more time has been available for detailed summaries of the seasons survey work. Each of our county agents prints a monthly paper containing several pages treating of timely topics for his particular county. The cuts furnished by the Office of Cereal Investigations are very useful in connection with the summaries and articles which we have placed in those papers. The cuts usually win a place for the article on the front page.

The last session of the Michigan Legislature established a Department of Agriculture for this State. Mr. L. H. Halladay has been made Commissioner of Agriculture and Mr. John A. Doelle appointed Director of Agricultural Development. We are now engaged in outlining a plan of co-operation and have the promise of material assistance from the new Department.

We were fortunate in having Dr. W. W. Robbins visit us during the past month. Thirty-three large bushes which had been chopped off at the ground line were treated and we hope that we will have some good results in the spring. Several big plantings of barberries were visisted and one hedge planted twenty years ago which is known to have been chopped off six times in that period. It certainly is a typical example of what happens when barberry bushes are cut off. Runners have been sent out upon each side until the hedge is about six feet wide.

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson). No report.

Department of Agriculture, State Capitol, Madison (Barberry and [illegible] Noel F. Thompson). With October our field work for this season is about completed. One man is still at work but with the advent of cold weather it will probably not be long before we must stop entirely.

A survey of the season shows about four and a half counties completed since January or a total of eight and a half counties completed in the farm-to-farm survey from the beginning of the campaign to the present in Wisconsin. Escaped barberries account in a great measure for the small showing in territory covered that we are able to make. It is not our practice to have our men dig many escaped barberries. They locate the bushes and then it is the duty of the farmer to dig them. Nevertheless, almost one-half of the number of man-days available this past summer were used in scouting certain limited areas where there were escaped barberries. There is still considerable timber in Southern Wisconsin and scouting large woodlots for wild barberries is very slow work. For instance, in scouting one wild area of thirteen square miles, most of which was wooded and also hilly, it took about 160 man-days. Even then we undoubtedly missed many of the smaller plants and no effort was made to locate accurately the seedlings of which there were hundreds of thousands.

MINNESOTA

College of Agriculture, University Farm, St. Paul (Barberry Eradication, Leonard W. Melander). (Nov. 1) October was an ideal month for farm-to-farm barberry surveying. There was not a day lost on account of impassable roads, and the weather was just warm enough for working. The three teams which were in the field throughout the month succeeded in completing Todd and Sibley counties. We had hoped to complete Blue Earth County but several wild areas complicated matters. This county is a good example of what we expect to encounter in southeastern Minnesota next year. A total of 14 bushes were found on 4 properties in cities while 406 bushes were located on 22 properties in the country. Two hundred and ninety six of these bushes were escaped. All of these areas were mapped.

The following proves that it is worth while investigating "leads" secured from various sources. A lady in Blue Earth county on seeing a specimen of barberry said that she remembered seeing a lot of barberry near Glen Haven, Wisconsin. She gave the exact location. On giving Mr. Noel Thompson this information, he replied that this was a wild area extending over two to three miles and had yielded over 350,000 bushes. Many seedlings were still springing up. This shows the value of "tips". It is a paying proposition to make a note of all "tips" and run them down when covering the location in question in the farm-to-farm survey.

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman). No report.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger). (Oct. 31). Weather is dry as there has been no rain of any quantity since the eighth of September. Though there has been no killing frost to-date, practically all of the late date plats were harvested on the 28th. It is hoped that some of the late African sorghums will ripen seed before killed by frost. Of the African sorghums collected by Dr. Shantz, some, which were making boot at the time Dr. Ball studied them, have a good chance to mature seed. Thrashing of the sorghums will be started in the near future.

The writer made a trip to Stillwater, Okla., by auto on Oct. 22. Some good fields of kafir were seen between Woodward and Orienta, though most of the land on the south side of the Cimmaron River is too rough and broken for farming. From Ringwood east to Stillwater about 90 percent of the cultivated land is in wheat, the wheat is up and alive and that is all that can be said for it. Rain is needed from here to Stillwater.

Maximum temperature for last half of Octover 89° on the 23rd. Minimum 33° on the 20th. Precipitation 0.01 inch.

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker) (Nov. 1)

Yields of varieties of Winter Wheat grown on the Agronomy Farm, Manhattan Kansas, 1921.

Variety	Kans.No.	C.I.No.	
Montana No.36	2472	5749	34.0
Kanred	2401	5146	33.1
Blackhull	343	6491	33.1
*P 704	2381		32.8
P 1066	2415	5879	31.8
Kharkof	35	1442	31.3
Nebraska No.60	322	6290	31.3
P 1068	2414	5880	31.2
Kharkof	382	6206	31.2
Defiance Hard Winter	2123	6214	30.8
Turkey	5.0	1558	30.7
Khamont	2250	5790	30.6
Alberta Red	2048	5797	29.9
Defiance Hard Winter	373	6205	29.7
	1664	6472	29.7
Imp. Turkey	2382	5592	28.8
Crimean	646	6208	28.2
Beloglina	2411	1943	27.7
Minturki	2464	6155	26.3
Malakof	284	6470	26.2
Fulcaster	317	6471	25.1
Iowa No. 1946		6676	24.7
Red Winter	2101	6213	24.4
Minhardi	2450	5145	24.1
Fultz	2156	6215	18.7
Nebraska No. 28	34	5147	18.6
Harvest Queen	19	6133	17.6
Zimerman	2084	6211	13.4
* Nebraska No. 6	321	6243	32.8

Varieties of Oats - Manhattan, Kansas 1921.

Variety	Kansas.No.	C.I.No.	Yield.
Kherson	6021		34.0
Kherson	5009		33.5
Kherson	5034	1209	29.8
Iowar	5218	847	28.4
Richland	5209	767	30.9
Albion	5208	729	30.9
Burt	6052	1919	32.
Burt	5211	1917	29.8
Burt	5020	293	37.9
Kanota	5179	839	42.9
Fulghum	5181	1912	32.
Aurora	5206	831	24.
Red Texas	6084	1925	36.
Red Algerian	5105	286	35.3
Red Texas	5085	1915	31.9
Red Texas	5013		29.4
Red Texas (Roediger)			32.7
Barley (Common 6 Row)			20.4
Marquis wheat			3.6

Hays Branch Station, Hays (A. F. Swanson). (Nov 2.) Having completed the field work I left Hays for Manhattan on October 29 and am at the present time attending a series of lectures on biometrical subjects given by Dr. H. H. Love of Cornell University for the members of the experiment station staff. I am also working up data for the 1921 Annual Report.

Climatic conditions are still unfavorable at Hays for the 1921 wheat crop as only a trace of moisture has fallen since August 11. Wheat on fallow ground is doing well except that the stand is not uniform. On fall plowed ground or on poorly prepared seedbeds little growth has as yet been made. In fact much of the wheat has not yet germinated.

The following yields of sorghums were obtained this season. The plats were duplicated on .04 acre on fall plowed ground, blank listed in May and planted with a corn planter.

Variety	Crop yield in pounds	Grain yield in bushels.
Milo Group		
Std. Yellow C. I. 234	7703	43.5
Dwf. Yellow C. I. 164	7762	46.0
Dwf. Yellow C. I. 332	7488	42.6
Early Yellow	8300	41.7
Std. White C. I. 352	8638	46.3
Early White C. I. 480	9050	51.3
Dwf. White	8000	56.5
Feterita Group		
Feterita C. I. 182	6425	43.8
Feterita C. I. 182-1	5737	44.0
Feterita C. I. 182-2	6538	45.1

Spur feterita C. I. 653	6187	37.2
Dwarf feterita	4336	31.1
<u>Blackhull kafir</u>		
Standard kafir C. I. 71	6313	44.4
Standard kafir C.I. 204	6625	31.3
Lubbock Sta. Texas 153	6513	31.2
Sunrise C. I. 472	7700	36.7
Dwf. Blackhull	6125	33.9
Dawn kafir	5563	31.5
340-1 Selection	3675	29.2
<u>Kafirs other than Blackhull</u>		
White kafir C. I. 342	5313	34.5
White kafir C. I. 314	6113	36.4
Red kafir C. I. 34	7288	41.1
Red kafir FC I. 02820	6125	41.1
Pink kafir C. I. 432	7738	46.0
Progressive kafir C. I. 623	6638	40.0
<u>Miscellaneous Group</u>		
Milo x kafir cross	6425	46.8
Gainmaker	7138	49.5
Husserita	6750	47.6
Sudan corn	7188	45.6
Early buff durra	4270	30.4
Bred sorgo	6600	41.9
Dwarf hegari	6363	46.2
Manchu brown Koaliang	4719	27.0
Dwf. Shantung Koaliang	3936	26.2
Shallu	5440	22.6
Darso	4550	31.3
Shrock	7013	39.6
White durra	5590	21.4
Tricker sorgo	6125	35.3
Red amber	7563	35.9
Bloody butcher corn	5263	38.8

The season was favorable for sorghums, the heavy rains of July 4 and August 11 being particularly helpful in bringing the crop along. The yield for Dawn kafir was not as high as expected as a sufficient stand was not secured for the largest yield.

COLORADO

<u>Agricultural College, Fort Collins</u> (Barberry Eradication, C.D.Learn, Col.). The original survey was completed insofar as was deemed necessary in September. All field men left either to attend college or accept other positions. The leader resigned to continue graduate studies in landscape architecture at Harvard University. While many of the properties upon which barberries have been found have been revisited at least once, many sprouts and seedlins were found so that a complete resurvey next summer is probably necessary.

Akron Experiment Farm, Akron (F. A. Coffman). (Oct. 31). As a whole the weather conditions at Akron were very mild during October, Until the last week of the month no precipitations of any value to crops were received and as a result winter wheat prospects were far from bright when the storm of October 25, came. Up until October 25, the weather had been very warm, dry and at times windy. On October 24, a severe wind storm was experienced and if moisture had not been received on October 24, very likely a great amount of the early sown wheat would have been completedly ruined. During the night of October 24, the temperature made a sudden drop and it started to rain, the storm continued throughout the entire day of October 25, and well into the night. A total of nearly one inch of moisture was received and the wheat crop was greatly benefited. While the storm started with rain, it turned to snow and sleet early in the day and the ground was covered with snow the morning of October 26.

During the latter half of October, the corn in experiments with the crop was husked and the Cereal grain was stored for the winter. As weather conditions have been very mild this fall the Cereal work was completed much earlier than usual and as a whole the work is in the best condition the writer has ever seen it at this time of the year. Probably the one unsatisfactory feature has been that due to the very dry weather the winter wheat stands on the cornstubble plats were uneven and in one or two of the nursery experiments not enough plants had emerged to make stand data worth taking. As cold weather had arrived at Akron, with the coming of the storm of October 25, it is hardly likely that some of the wheat will fully emerge before midwinter.

In the corn experiments some very satisfactory results were obtained. The selection from Swadley White Dent, made in 1918, gave very good results this season. This selection yielded practically the same as did the original seed the past season. The four year average for this selection is very close to 35 bushels, or nearly 10 bushels above the four year average for the unselected Swadley. All of our corn was very badly infected with smut this season and from the past two years results it may be that drought is in some measure responsible factor, The percentage of smut in the date-of-seeding experiment are very striking as the percent of smutted stalks declines very rapidly with the later dates of planting.

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Yields obtained from a varietal experiment of spring wheat varieties grown in fiftieth acre plats on fallow and cornland at the Akron Field Station, 1921.

Group	Variety	C.I.No.	Fallow 1.	Fallow 2.	Fallow Av.	Cornland 1.	Cornland 2.	Cornland Av.	Var. Avg.
Common	Pioneer	4324	8.3	10.8	9.5	6.2	5.2	5.7	7.6
	Ruby	3647	8.5	11.0	10.0	6.2	4.3	5.2	7.6
	Marquis	3641	5.2	5.6	5.4	5.1	5.7	5.4	7.4
	Converse	4141	7.5	5.2	6.3	6.0	4.3	5.1	6.7
	Red Bobs	6255	7.6	8.7	8.1	4.6	4.3	4.4	6.3
	Kota	6246	6.6	7.8	7.2	4.6	3.6	4.1	5.7
	Kitchener	4600	7.1	6.2	6.6	4.5	4.9	4.7	5.7
	Norka	4317	5.0	5.7	5.3	4.2	2.7	3.4	4.4
	Prelude	4323	5.4	5.8	5.6	3.3	2.2	2.7	4.2
	Glyndon	2673	5.8		5.8	2.3		2.3	4.0
	Haynes	2674		2.0	2.0		1.7	1.7	1.8

Group	Variety	C. I. No.	Fallow 1.	Fallow 2.	Fallow Av.	Cornland 1.	Cornland 2.	Cornland Av	Var. Aver.
Durum	Arnautka Sl.	1493-7-12		12.5	12.5		7.8	7.8	10.2
	Peliss	1584	11.7	8.5	10.1	5.9	10.2	8.0	9.1
	Kubanka	1440	9.6	11.0	10.3	7.9	5.7	6.8	8.6
	Beloturka	1520	10.0		10.0	6.9		6.9	8.5
	D-5	5322	9.6	9.4	9.5	6.8	7.7	7.2	8.4
	Gold Ball	6227	14.2	8.3	11.2	3.4	6.8	5.1	8.2
	Arnautka	1493	7.9	10.0	8.9	7.3	5.9	6.6	7.8
	Acme	5284	9.6	8.3	8.9	5.1	7.7	6.4	7.7
	Arnautka	4064	9.6	7.7	8.6	5.5	6.2	5.8	7.2
	Monad	3320	6.7	9.6	8.1	7.3	5.3	6.3	7.2
	Kahla	5589	7.1	6.7	6.9	6.7	3.8	5.2	6.1

Note- Due to lack of space but two plats each of four varieties were sown.

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Yields obtained in a varietal experiment with spring barleys grown in replicated fiftieth acre plats on fallow and cornland at the Akron Field Station, in 1921.

2-Row Covered	Blackhull	878		14.8	14.8		17.7	17.7	16.2
	Blackhull	878-4-2	16.7		16.7	13.8		13.8	15.2
	White Smyrna	195	20.8	16.4	18.6	16.9	16.7	16.8	17.7
	Hannchen	602	20.8	16.4	18.6	20.6	15.1	17.8	18.2
	Orel	551	15.8		15.8	16.0		16.0	14.9
6-Row Covered	Coast	690	27.1	16.7	21.9	23.4	16.1	19.7	20.8
	Horsford	877	16.4		16.4	17.2		17.2	16.8
2-Row Naked	Baku	709	15.1		15.1	15.1		15.1	15.1
6-Row Naked	Nepal	595		17.0	17.0		9.6	9.6	15.3
	Himalaya	620		17.7	17.7		13.0	13.0	15.3

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel). (Oct. 31) During October an original survey has been completed in Hall and Nemaha counties. Work has been begun on the small amount of Johnson County which was not finished last year, and new work has been begun in Merrick County. Two hundred eighty five barberry bushes were found and 99 removed. Two hundred eighty three of these were in the country while two were in the city.

WYOMING

Cheyenne Experiment Farm, Cheyenne (A. L. Nelson). No report.

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, Ralph U. Cotter). (Oct. 31) During the month of October, Star Valley in Lincoln County, Fremont County, and part of Laramie County were covered in original survey, but 5 barberry bushes on 2 properties at Cokeville, Lincoln, County, were found. On resurvey barberries were removed from one property in Lincoln County, two properties in Uinta County, and 1 property each in Sweetwater and Carbon Counties. One property in Kemmerer, in Lincoln County still has barberries, but the wife of the owner said that they would be removed. One property in Evanston, Uinta County, also has barberries. The owner is in California. His agent promised to communicate with him and, if no objections were raised, to remove the bushes.

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, Lynn D. Hutton). (Oct. 31) During October the eastern tier of townships of Beadle County were surveyed. No bushes were found. In addition, one planting of 55 bushes was found and removed from Brookings County. This had been missed on the original survey. The County Agent of Miner County reported 5 plantings of 50 bushes. These plantings had been removed under the county agent's direction before the rural survey was made but for some reason were not reported to this office. A lead was procured through State fair publicity which, when followed up, lead to the finding in Sanborn County of 1,008 bushes, 200 of which were escaped. As that county is one of the ones to be worked during the next summer, it was thought advisable to follow up the report this autumn in order to get so large a number of bushes removed immediately.

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel). The weather has been excellent for field work this month. Harvesting of all plats of flax, excepting one which was sown very late, was completed several days ago. This one plat has been subjected to several frosts without having the plants killed. Rust may still be found on the leaves. Plants from this plat are being removed to the greenhouse where they will be used in inoculation experiments.

During the past season a great many selections and varieties of flax were tested for wilt resistance which in making the final determinations necessitate counting and threshed by hand. About 75 thousand plants have been counted and threshed up to this time. This slow and tedious work is almost completed and the data are being summarized.

Culturing fungi and making inoculations consitiutes a part of the work now under way.

State College of Agriculture, Agricultural College (Barberry Eradication, George C. Mayoue) (Oct. 31) October 31st represents almost the end of the field survey work in North Dakota for the season. However, as the roads are in excellent condition some field work will be continued just as long as the weather permits.

Two assistants completed the original work in Logan and McIntosh Counties. The State Leader and an assistant hired by the day did re-survey work in Cass County.

The results of barberry eradication in North Dakota for the month of October showed that 41 bushes were located on 6 properties in the rural districts in the original survey, and 38 sprouts on 14 properties in the resurvey. No infection was found on the bushes located during this month.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.). (Nov. 3.) The last half of October was exceptionally mild for this time of year. On only five of the sixteen nights did the temperature go to freezing or below. The minimum temperature was only 26° recorded Oct. 20. The maximum temperature was 75° recorded Oct. 21.

During this period there have been some good soaking rains amounting to 1.27 in. altogether. As a result of these rains some good fall plowing has been done on the station during the last few days.

The flax from the seed treatment experiment, which was left out in the field and was caught in the rain, still remains to be thrashed. This was left out to avoid contamination with wilt infected flax, and was not brought in until the thrasher and everything else likely to come in contact with it were disinfected with formaldehyde.

There is also some flax still standing in the field and apparently growing, though the frosts werhad were probably sufficient to prevent the further development of the green bolls.

The thrashing of all the rest of the flax nursery planting and plant selections is completed.

Dickinson Substation, Dickinson (Ralph W. Smith) (Oct. 31.) The weather during the month of October has been unusually mild and dry. There has been only a trace of snow and only 0.13 inch of rain. The maximum temperature during the month was 82 degrees and the minimum, 20 degrees.

The growth of winter wheat and rye has been slight, because of the dry condition of the soil. The fall sown grain at the Substation was sown early while the ground was moist and was well rooted before the dry weather set in.

All cereal crop yields have been computed and grain for spring seeding in plats and nursery has been cleaned. The work of tabulating yields for the annual report is now in progress.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May) (Oct. 31.) I enclose herewith a preliminary report of grain yields in the furrow drill experiments.

The furrow drill this year has shown an even greater superiority over the ordinary drill than last year. Last year on an average of 36 plats for each drill the furrow drill outyielded the ordinary drill by 5.8 bushels per acre while this year on the average of the same number of plats the furrow drill outyielded the ordinary drill by about 8.0 bushels per acre. The relative results of the north and south and east and west directions of seeding this year reverses the results of last year but not to the same degree. The north and south direction of seeding averages about one and one-half bushels per acre more than the other direction while last year the east and west direction of seeding outyielded the north and south direction by 4 to 8 bushels per acre.

The rates of straw mulch in the straw mulch experiments have very little significance because the wind blew a very large part of the straw away, making the rates of application very irregular.

Winter wheat which was sown early on fallow has made a good growth and the prospects of it withstanding the winter look very good. Late sown wheat and wheat sown in stubble does not look so promising. It is reported in some cases that wheat sown in stubble is dead. The acreage of fall sown wheat in this vicinity is very small. We have not had any precipitation of consequence during October which accounts for the dying of the wheat in stubble. The soil is becoming dry but there is sufficient in clean fallowed fields to keep the wheat growing for a long time yet. Temperatures have averaged very mild during the month.

The construction of the machinery shed was begun this morning.

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Preliminary report of grain yields in the type of drill experiments.

Type of Drill-Strawmulch Experiment

Rate of strawmulch per acre.	Furrow Drill Bus. per acre	Ordinary Drill bus. per acre.
None	20.8	12.6
1/4 Ton	22.5	16.8
1/2 "	25.8	20.2
1 "	26.8	20.6
2 "	25.7	20.7
3 "	22.2	17.3
Average *	24.0	18.0

Type of Drill-Rate-and Direction of Seeding Experiment

Rate of Seeding per acre	Furrow Drill		Ordinary Drill	
	North and South	East and West	North and South	East & West
2 pecks	17.1	14.8	8.5	7.5
3 "	17.9	18.5	9.2	8.3
4 "	22.5	21.5	12.7	10.6
5 "	24.2	20.3	14.5	12.3
Average **	20.4	18.9	11.2	9.7

Furrow Drill-Harrowing Experiment

Harrowed	Not Harrowed
26.6 ***	26.3

* Average of 24 plats for each drill
** Average of 16 plats for each direction with each drill
*** Average of 10 plats for each treatment.

Assiniboine Field Station, Havre (G. W. Morgan) The following are yields from wheat varieties grown in fiftieth acre plats, replicated 3 times at the Assiniboine Field Station, in 1921.

Variety	C. I. No.	Average Yield per acre (bushels).
Kitchener	4000	15.3
Kota	6248	15.2
Red Bobs	6255	14.4
Power Fife	3097	13.6
Early Baart	1697	13.6
Monad	3320	13.3
Preston	3081	13.2
Kubanka	6319	13.2
Galgalos	2398	13.2
Peliss	1584	12.9
Kubanka	1440	11.8
Marquis	3641	11.7
Arnautka	4064	10.8
Kahla	5329	10.6
Hard Federation	4733	10.6
Ruby	6047	10.2

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WYOMING - -Continued from page 264

Sheridan Field Station, Sheridan (R. S. Towle) The following are yields obtained from winter and spring wheats grown in triplicate plats at the Sheridan Field Station in 1921.

Winter Wheat

Variety	C. I. No.	Average yield per acre. (bushels).
Kharkof	1442	22.1
Kanred	5146	22.1
Crimean	1559	21.9
Turkey	1371	18.3
Beloglina	1343	18.0
Alton(Ghirka Winter)	1492	19.3
Buffum No. 17	3330	11.9

Portions of all of these varieties were badly blown by winter and spring winds. The Kharkof was situated so that a slightly larger portion of its area was more badly blown than was the Kanred.

Spring Wheat

Red Bobs	6255	3.0
Kota	6248	3.2
Norka	4377	3.1
Hard Federation	4733	3.0

Pioneer	4384	2.8
Peliss	1684	2.8
Preston	7091	2.7
Monad	5420	2.6
Acme	5034	2.4
Kubanka	1440	2.3
Power	7697	2.2
Ruby	6047	2.2
Arnautka	4864	2.0
Marquis	3641	1.9
Haynes	2274	1.2

Spring wheat damaged probably about 50 percent by grasshoppers. Taking into consideration damage by early loss of foliage, percentage due to hoppers may have been considerably more, but this is hard to differentiate from damage from drouth. Hopper damage was relatively greater with later varieties.

State College of Agriculture, Bozeman (Barberry Eradication, H. E. Morris) All resurvey work of the season was completed by Mr. Jennison under my direction during July. A resurvey of all plantings for sprouts will be necessary next summer.

WESTERN BASIN AND COAST AREAS
(North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (.

OREGON

Sherman County Branch Station, Moro (D. . . Stephens). (Oct. 18) During the last week at different times we have had about one-half inch of precipitation. This has not been enough to make the moisture meet in the summerfallow. We are proceeding, however, with our fall seeding and hope to get it all completed within the next week. In our rate and date of sowing experiments grain sown two weeks and a month ago has not emerged with uniform stands.

(Nov. 3) Throughout most of Eastern Oregon, the month of October was warm and unusually dry. The total precipitation for the month at the Station was .66 inch, .21 inch being the greatest amount for any one day. During the month of September, we had only .21 inch precipitation and there is not enough moisture in the ground to make conditions favorable for winter wheat. Early-sown winter wheat has emerged only in spots, but wheat sown two weeks ago is beginning to emerge with indications of a fairly uniform stand. If dry weather continues, however, for the next two weeks, much of this wheat is likely to die for lack of moisture. There has not been enough rain to make the moisture meet on the summerfallow.

The sowing of winter wheat in the rotation, tillage and varietal trials and in the nursery has been completed. The winter wheat varietal trial this year consists of twenty-one varieties in triplicate one-twentieth acre plats and sixteen smut-resistant wheat varieties in single one-twentieth acre plats. In the nursery were sown 1,320 [illegible] of hybrids selections and pure-lines and a nursery varietal trial of [illegible] rows of hybrids, pure-line selections and miscellaneous wheat varieties.

CALIFORNIA

Rice Field Station, Biggs (J. W. Jones) (Nov. 4.) We completed fall threshing at the station last evening with the exception of about 50 rod rows which were harvested today. The yields obtained were variable and not quite as good as I expected that they would be. The nursery yields were very low due probably to an extra heavy growth of sedge between the rows. In a recent letter you asked if we got additional water grass experiments started this year, we started some control experiments which gave the following results:

Plat 1. Reasonably good seedbed, broadcast, harrowed, irrigated twice and water held 6 inches deep, yield per acre 1658 pounds.

Plat 2. Same treatment as plat 1, except that plat 2 was drilled in, yield per acre 2284 pounds.

Plat 3. Same treatment as plat 1, except that the plat was not harrowed after seeding, yield per acre 3028 pounds.

Plat 4. Poor seedbed, broadcast May 16, held water 2 inches deep until rice was up then 6 inches deep continuously, yield per acre 3272 pounds.

Plat 5. Same as plat 4 only water was held 1 inch deep at first then 6 inches continuously, yield per acre 3168 pounds.

Plat 6. Same as plat 4, only water was held 6 inches deep continuously from planting to maturity, yield per acre 3150 pounds.

Plat 7. Poor seedbed, land submerged 6 inches deep May 21st, rice broadcast in the water May 25th. Water held continuously, yield per acre 3230 pounds.

Plats 1, 2, 3, were seeded May 9, plats 4, 5, 6 May 16. Plat 7 May 25 all plats sown at the rate of 150 pounds per acre. This is an interesting experiment and the yields are good.

Plant Introduction Station, Chico (V. R. Florell). No report.

Agricultural Experiment Stations, Davis and Berkeley (F. N. Biggs and W. W. Mackie.) No report.

CEREAL COURIER

Official messenger of the office of Cereal Investigations,
Bureau of Plant Industry U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 13 November 20, 1921 No. 29
Personnel (Nov. 11-20) and Field Station (Nov. 1-15) Issue.

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PERSONAL ITEMS

Dwight F. Bracher, field assistant in smut control investigations with headquarters at Bloomington, Ill., resigned November 30.

Gordon C. Curran, field assistant in the barberry eradication campaign in Minnesota, arrived in Washington on November 14 to remain two or three months for the purpose of wrapping up the results of the season's work.

Elmer C. Loy, temporary field assistant in barberry eradication in Iowa, resigned October 31.

Harris Moak, unskilled laborer at the Biggs Rice Field Station, California, resigned November 5.

Merritt N. Pore left Washington November 17 for Sacaton, Ariz., where he will sow an extensive barley nursery for the purpose of making genetic studies on the Sacaton Field Station.

C. W. Warburton, who has been in the field since September 21 in connection with the collection of Federal seed loans, returned to Washington November 14.

VISITORS

Director James T. Jardine of the Oregon Agricultural Experiment Station visited the office on November 15 to discuss various phases of the cooperative research now in progress in Oregon.

Dr. A. W. Thatcher, director of the New York Agricultural Experiment Station, was an office visitor on November 12.

Dr. N. I. Vavilov completed his discussion of various phases of cereal investigations and left Washington on November 18. He has established a permanent new plant breeding station under the direction of D. Zerobin at 703 Sixth Avenue, New York City.

Dr. C. A. Zavitz, professor of agronomy in the Ontario Agricultural College, was an office visitor on November 14 and 15. He has been spending several days in Washington in library research on agricultural subjects.

MANUSCRIPTS AND PUBLICATIONS

Farmers' Bulletin No. 1224, entitled "Wheat Scab and its Control," by Aaron G. Johnson and James T. Richter, was received from the Government Printing Office on November 12.

Page proof of Department Bulletin No. 976, "Cultural Experiments with Grain Sorghums in the Texas Panhandle," by R. H. Ahlugee, formerly of this office, was read on November 9.

A paper entitled "Loss from Rye Ergot," by Edith K. Seymour and Frank I. McFarland, was published in Phytopathology, vol. 11, no. 7, pp. 283-289, fig. 2, issued July, 1921.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens, and Substations (J. B. Cailes). No report.

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor). (Nov. 15) The colder weather of the past two weeks has checked the fall growth of the cereal crops. This check is particularly noticeable in the barley plats, where the tips of the leaves have turned yellowish. Wheat, oats, barley, and rye seeded the latter part of September and in early October have on the whole good fall stands and appear in excellent condition. With the exception of the barley nursery, fall growth is not as heavy as usual with any of the cereals. Dog fennel and chickweed, the two weed pests of Arlington Farm, have as yet gained little footing in any of the plats, but in the wheat nursery devoted to individual plants they, along with volunteer rye, are proving a serious pest.

NEW YORK

Cornell University Experiment Station, Ithaca (H. H. Love). No report.

Rhinebeck (Corn Investigations, L. S. Mayer). No report.

MIDDLE MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Crowley Rice Station, Crowley (J. Mitchell Jenkins). No report.

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler). (Nov. 15) According to the cooperative crop reporting service of the State Board of Agriculture and the Federal Bureau of Crop Estimates, the average yield of corn in this State was 30 bushels in 1921, as compared with 32 bushels in 1920. The quality of corn was reduced by weather conditions and only 80 per cent considered merchantable. Of the entire crop, 86 per cent will be handled as grain, 7 per cent will be hogged off, and 7 per cent cut for silage.

Wheat seeding was completed by the first of this month, but the dry weather has resulted in slow germination and uneven stand. On the whole, our winter wheat crop looks good and with the benefit of recent rains it is making a good start. Very little has been seen of the Hessian fly thus far.

The 1921 wheat crop averaged rather low in quality, averaging about 5 per cent grade No. 1, 31 per cent No. 2, 38 per cent No. 3, and 20 per cent No. 4. The average weight per bushel was 56.5 pounds.

IOWA

Agricultural Experiment Station, Ames (L. C. Burnett). No report.

Report of Trip to Abilene, Kans., November 7, 1921, by L. E. Melchers.

A trip was made to Abilene, Kans., in company with H. H. McKinney, to inspect the wheat foot rot plats 14 miles north and west of Abilene on the farm of Mr. Kehler.

The plats were found to be in splendid shape, consisting of a detailed varietal experiment with winter wheat, a date-of-seeding experiment with Kanred wheat, and tenth-acre soil fertilizer and rotation plats. In addition, about a quarter of an acre of prairie land had been plowed and sown to Kanred wheat.

In the soil treatment plats in which formaldehyde was used in the proportion of 1 gallon to 40 gallons of water and aerated for about ten or eleven days, considerable injury to the wheat was noted. Apparently, the soil was not sufficiently aerated to prevent injury. While the seed has not been killed, the plants were just emerging, being about three weeks behind the other wheat.

No indication could be noted as to symptoms of foot rot. All the wheat has made very good growth, considering the abnormally dry weather.

ILLINOIS

Funk Brothers Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert). No report.

INDIANA

Purdue University Agricultural Experiment Station (Corn Root, Stalk, and Ear Rots, G. N. Hoffer). E. H. Dundleston returned last week from Washington and Petersburg, Ind., after completing the harvesting of fertilizer plots at these places.

Greenhouse work has been begun. Over 100 pot cultures have been started and all of the selfed ears for use next year will be tested in the soil beds during the winter.

Preparations are under way for an exhibit at the National Hay and Grain Show at Chicago, October 30 to November 3. The modified rag doll method of testing seed corn will be demonstrated at that time.

Purdue University Agricultural Experiment Station (Leaf Rust Investigations, H. S. Jackson and E. B. Mains). No report.

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson). No report.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman). No report.

WHEAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger). (Nov. 15) There has been no rain this month to date. Wheat needs rain badly, though from present appearances we can expect a dry winter. Our first killing freeze occurred on November 8, with a temperature of 23°.

The main work on the cereal project has been harvesting and taking notes on the African sorghums which were mature enough for seed, and working up data on a number of rows of F_2 sorghum hybrids. Work on this material is progressing, and as these are from controlled crosses made in 1919 the inheritance of a few characters should be determined.

We are awaiting some repairs for the motor before thrashing can be resumed.

Maximum temperature for the first half of November was 84° on the 4th; minimum, 23° on the 8th; precipitation, none.

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker). No report

Hays Branch Station, Hays (A. F. Swanson). (Nov. 17) The experimental data for the furrow drill vs the regular 8-inch drill have now been completed and the results are presented in the following table:

Direction of seeding	Rate of seeding [illegible], bus. per acre: 1 pk.	2 pks.	3 pks.	4 pks.	5 pks.	Kind of [illegible] preparation
Furrow drill:						
E & W	26.3	29.3	29.3	31.0	30.4	Fallow
N & S	32.3	33.0	32.0	29.3	25.9	Fallow
E & W	24.3	27.0	30.2	29.4	27.3	Fall plowed
N & S	31.0	30.3	29.0	21.4	21.4	Fall plowed
Average	28.2	30.3	28.4	28.3	24.3	
Regular 6-inch drill:						
E & W	26.8	34.0	29.0	33.2	31.2	Fallow
N & S	36.1	33.1	32.6	31.2	36.3	Fallow
E & W	22.6	26.7	25.3	22.9	26.0	Fall plowed
N & S	28.3	29.3	26.2	21.3	30.3	Fall plowed
Average	28.8	31.3	28.3	27.1	31.1	

Note: - The plats were one-twentieth acre in size.

There has been no advantage in using the furrow drill over the regular drill at the Hays station during the last two years. Winterkilling of wheat is not a common occurrence with us and the efficacy of the furrow drill in preventing loss from this source has not been proved at Hays.

Another observation which has been worked out from the 2-year average results obtained from the furrow drill vs regular drill experiment is the effect of direction of seeding on yield. All north-and-south plats for all rates of seeding from 1 to 5 pecks have given an average increase of 2.0 bushels to the acre over the east-and-west seeded plats, where the regular drill was used.

The average increase for all north-and-south plats with the furrow drill has been 0.6 bushel to the acre over the east-and-west seeded plats. The increase in the north-and-south direction of seeding occurred in the 1-, 2-, and 3-peck rates of seeding. In the 4- and 5-peck rates of seeding the increase was in favor of east-and-west direction of seeding.

COLORADO

Akron Experiment Farm, Akron (F. A. Coffman). No report.

WYOMING

Cheyenne Experiment Farm, Cheyenne (A. L. Nelson). No report.

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel). No report.

Northern Great Plains Field Station, Mandan (J. C. Brandes, Jr.). (Nov. 16) A great change in the weather occurred during the first half of November, compared with the previous semi-monthly period. Snow has fallen on nine of the fifteen days, for which a total precipitation of 0.69 inch was recorded.

Maximum temperature for the period was 60°, recorded November 4; minimum, 9°, recorded November 3 and 11. Average mean temperature for the period was 33°.

Threshing the seed-treatment experiment flax, the last of the flax remaining to be threshed, was completed November 8.

Work on reports for the season is well under way.

The winter wheat nursery has a good protective covering of snow. The ground was not frozen before this snow fell; therefore, present conditions are apparently exceptionally favorable for the wheat to survive.

Dickinson Substation, Dickinson (Ralph W. Smith). No report.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May). (Nov. 12) Fall wheat sown on fallow continues to look fine. This is especially true of early sown wheat. Wheat sown in stubble is practically all gone. However, the acreage of fall wheat in this immediate section is very small. All of the wheat on the station farm, with the exception of one field sown in stubble, is in exceptionally fine condition.

We had a snowfall on November 8 with amounted to 0.19 inch precipitation. This will help the wheat considerably, but we need much more. The soil is getting quite dry.

The minimum temperature for the first half of the month was 8° on November 8, and the maximum was 72° on November 5.

WESTERN BASIN AND COAST AREAS
(North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (A. E. McClymonds). No report.

OREGON

Sherman County Branch Station, Moro (D. E. Stephens). No report.

CALIFORNIA

Rice Field Station, Biggs (J. W. Jones). No report.

Plant Introduction Station, Chico (V. H. Florell). No report.

Agricultural Experiment Station, Davis (F. N. Briggs). No report.

Agricultural Experiment Station, Berkeley (W. W. Mackie). No report.

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C E R E A L C O U R I E R

Official Messenger of the Office of Cereal Investigations
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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Vol. 15 November 30, 1921. No. 30
Personnel (November 16 - 30) and Project Issue.

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DATE OF ISSUANCE OF CEREAL COURIER.

Beginning with this issue, the Cereal Courier will appear semimonthly, the issues being dated the 15th and last day of each month. This semimonthly issuance will be continued until April 1, when the issuance of numbers at 10-day intervals will be resumed.

PERSONNEL ITEMS

F. A. Coffman, assistant agronomist in charge of cereal experiments on the Akron Experiment Farm, Akron, Colo., will spend the winter months at the Kansas Agricultural Experiment Station.

Ralph E. Curtiss, field assistant in barberry eradication in Minnesota, resigned November 21.

The temporary appointment of Murray Fellows, field assistant in connection with experiments with the take-all disease of wheat at Madison, Wis., was terminated November 30.

John S. Holmes, field assistant in barberry eradication in Iowa, resigned November 15.

James T. Jacques, field assistant in barberry eradication in Minnesota, resigned November 21.

Hale W. Manvel, field assistant in barberry eradication in Minnesota, resigned November 6.

L. S. Mayer, who has been conducting experiments with corn at Rhinebeck N. Y., during the past several months, returned to Washington November 30.

Robert J. Noble, of Sydney, Australia, former assistant biologist of the New South Wales Department of Agriculture, now a student in the Department of Plant Pathology, University of Minnesota, has been appointed as collaborator with this Office in a special study of the flag smut disease.

A. F. Swanson, in charge of cereal experiments on the Hays Branch Station, Hays, Kans., who has been at the Kansas Agricultural Experiment Station during the past two or three weeks, returned to Hays November 26, to take stand counts and notes on experimental wheat, and to put the fields in the best possible condition to prevent damage from soil blowing during the winter and early spring. He will return to Manhattan about December 6, to remain during the winter months.

VISITORS.

Rev. M. A. G. Himalaya, Professor of Natural Sciences in the University of Portugal, and Attache to the Portugese Legation in Washington was an office visitor November 29 and 30.

PUBLICATIONS.

Galley proof of Department Bulletin 1014, " The Effect of Date of Seeding on Germination, Growth, and Development of Corn," by E. B. Brown and H. S. Garrison, was read November 30.

PAPERS FOR TORONTO MEETING

The following papers have been approved for presentation at the meeting of the Phytopathological Society in Toronto in connection with the annual meeting of the American Association for the Advancement of Science during the last week in December. Abstracts of these papers have been approved for publication in Phytopathology.

Correlated Inheritance in Wheat of Winter-spring Habit of Growth and Rust Resistance, by Olaf S. Aamodt.

The Inheritance of Resistance to Several Biologic Forms of *Puccinia graminis tritici* in a Cross between Kanred and Marquis Wheats, by Olaf S. Aamodt.

A New Leaf Spot of Kentucky Bluegrass Caused by an Undescribed Species of Helminthosporium, by Charles Dreschler.

Net Blotch of Meadow Fescue Caused by an Undescribed Species of Helminthosporium, by Charles Dreschler.

Relation of Temperature, Soil Moisture, and Oxygen to the Germination of the Spore, of *Ustilago avenae*, by Edith Seymour Jones.

Progress of the Barberry Eradication Campaign, by F. A. Kempton.

Rye Resistant to Leaf Rust, *Puccinia dispersa*, by E. B. Mains and C. E. Leighty.

The Helminthosporium Disease of Wheat and the Influence of Soil Temperature on Seedling Infection, by H. H. McKinney.

Foot Rot Disease of Wheat in Kansas, by H. H. McKinney and L. E. Melchers.

Seedling Blight Caused by Fusarium culmorum var. latesius Sacc., by Jessie R. Rose.

Inheritance of Resistance to Black Stem Rust in Crosses Between Varieties of Common Wheat (Triticum vulgare), by L. E. Melchers and John H. Parker.

The Effect of Fertilizers on the Development of Stem Rust of Wheat, by E. C. Stakman and Olaf S. Aamodt.

Observations on the Spore Content of the Upper Air, by E. C. Stakman, A. W. Henry, W. N. Christopher, and G. C. Curran.

The following papers have been approved for presentation before the Mycological Section of the Botanical Society of America at its Toronto meeting:

The Acidity of Some Rust and Smut-Resistant and Susceptible Varieties of Wheat, and Some Factors Affecting it, by Annie May Hurd.

Cultures of Puccinia clematidis on Ranunculaceous Hosts, by E. B. Mains and H. S. Jackson.

PROJECT REPORTS

218 A. INVESTIGATIONS OF IMPERFECT AND SAC FUNGI

(Dr. A. G. Johnson, Pathologist in Charge)

CORN ROOT AND STALK ROTS

The following statement on seed corn as a source of root rot infection is being sent out by E. W. Clayton, Extension Plant Pathologist at Ohio State University. It was sent in by Prof. G. N. Hoffer with the suggestion that it was of enough interest to pathologists generally to warrant inclusion in the Cereal Courier.

SEED CORN - AS A SOURCE OF ROOT ROT INFECTION.

There are two factors which are responsible for practically all dead and weak germinating corn. The first of these is early fall freezing. The second is infestation of ears in the field by the root and ear rot fungi.

This fall, injury from freezing has been absent, but on the other hand there has been a tremendous infestation of the corn in the ear by root and ear rot fungi. We say root and ear rot because in so far as it is known, all of the serious ear parasites are also root rot organisms.

Last year, out of some 6,000 ears tested, 15 to 20 per cent were found infested with these disease organisms. This year we have found in the testing work so far conducted, more than 50 per cent of the corn diseased, and reports indicate that this condition is probably general, not only over our State, but throughout the entire corn belt.

The root and ear rot fungi when they attack ears of corn in the field may, if they get a sufficiently early start, cause a conspicuous rot, i.e., the ears which you have observed covered with a white mold. Such ears are entirely dead But for each ear that is visibly diseased in this way, there are at least ten others in which the disease has not yet progressed to such an extent as to make it visible to the eye. These ears will germinate a majority of the kernels, and the sprouts at the beginning would look perfectly healthy. Later, however, they rot.

Here is the yield record that we got this summer from 12 ears of corn, 6 diseased and 6 healthy.

Diseased ears (x)	Healthy ears (xx)
Row 69 -39.4 lbs yield per 33 yd row	Row 64 -51.6 lbs yield per 33 yd row
Row 70 -30.0 lbs yield per 33 yd row	Row 65 -65.0 lbs yield per 33 yd row
Row 71 -49.3 lbs yield per 33 yd row	Row 72 -53.0 lbs yield per 33 yd row
Row 73 -35.8 lbs yield per 33 yd row	Row 73 -49.7 lbs yield per 33 yd row
Row 81 -31.4 lbs yield per 33 yd row	Row 82 -47.8 lbs yield per 33 yd row
Row 85 -38.6 lbs yield per 33 yd row	Row 83 -54.9 lbs yield per 33 yd row
Average 36.6 lbs yield per 33 yd row	Average 54.3 lbs yield per 33 yd row

(x) Not less than 7 out of 8 kernels germinated when tested, but a good portion of these showed the presence of rot.

(xx) Ears germinated 8 kernels out of 8 and none showed evidence of rot.

A properly conducted germination test is the only way in which it is possible to cull out from the seed corn the diseased ears. For effective testing we recommend a seven day growing period with a temperature around 80 degrees Fahrenheit. The benefit derived from such testing is two-fold, (a) The yield of corn is increased, and (b) the spread of disease from field to field by way of the seed corn is avoided.

218 B. RUST INVESTIGATIONS

(Dr. H.B.Humphrey, Pathologist in Charge)

BARBERRY ERADICATION CAMPAIGN

(Dr. F. H. Kempton, Pathologist in Charge)

The campaign for barberry eradication in cooperation with the 13 north-central wheat-growing States, Colorado, Illinois, Indiana, Iowa, Michigan, Minnesota, Montana, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin, and Wyoming, begun in the spring of 1918, has now completed its fourth field season. Results summarized by years are as follows:

During 1918, an orginization was formed, a campaign of publicity and education that reached to all parts of the territory was conducted, and surveys to locate bushes were carried on in the cities and towns of most of the 13 States. Several hundred thousand barberry bushes were removed through the campaign of education. About 1,842,000 bushes were located on 23,200 properties, and 1,630,000 bushes were removed from 16,760 properties. In 1919, the Campaign developed two phases, the original survey and the resurvey. In the original survey, inspection of city and town properties was practically completed. Systematic farm-to-farm surveys were begun and an area equivalent to about 91 counties was surveyed. A total of 2,096,000 bushes were located on 18,700 properties and 2,025,000 bushes were removed from 16,000 properties.

In 1920, the third season, efforts were concentrated on the farm-to-farm survey, although a resurvey of cities and villages in the counties covered was carried on at the same time. The farm-to-farm survey covered an area equivalent to about 88 counties. Approximately 1,506,000 bushes were located on 2,900 properties and 518,300 bushes were removed from 5,600 properties.

In 1921, the fourth season, work was continued on the same basis as in 1920. Survey of an area equivalent to about 142 counties was completed. Of these, 23 counties were surveyed on funds furnished by the State of Minnesota. Approximately 157,000 bushes were located on 4,862 properties. Of these, 92,000 were escaped bushes on 497 properties. A total of 184,360 bushes was removed from 5,789 properties. In the resurvey, 21,360 sprouts were found and eradicated, and numerous seedlings were also found and removed. Investigations have been started which we hope will give us a successful method of eradicating both mature bushes and seedlings by chemical means.

During the four field seasons from April 1, 1918 to October 31, 1921, almost all cities, towns, and villages in the 13 States of the eradication area were surveyed. In the farm-to-farm survey, an area of approximately 321 counties was covered in the original survey but necessary resurveys were made in only a portion of these counties. The rural work is completed in Montana, Colorado, and Wyoming. Resurveys of each property on which barberries were found in these States will need to be made next year. A total of 5,601,257 bushes was located on 49,713 properties. Of these, 4,418,738 bushes were removed from 43,036 properties. Of the 1,182,519 bushes remaining on 4,679 properties, about 1,000,000 are escaped bushes, most of which are under 18 inches in height on 3 large escaped areas in Wisconsin.

Table 1 shows the results by States for the year 1921 and Table 2 the results by States for the 4-year period, 1918 to 1921.

218 D. SMUT INVESTIGATIONS

(Dr. W. H. Tisdale, Pathologist in Charge)

Progress Report on Cereal Smut Investigations, Arlington Farm, Va., 1921.

Loose Smut: Further use of the simplified hot water treatment has given gratifying results. It has a number of advantages over the method which has been in common use. In brief, it (1) reduces the period of treatment about one-half; (2) eliminates three of the four immersions and the labor incident thereto; (3) completely controls loose smut covered smut [illegible] by two [illegible] results (4) increases the yield, whereas the old method decreases it (one year's results), and (5) reduces the cost of treatment about one-half.

Table 1. Data showing results obtained in the barberry eradication campaign from January 1 to October 31, 1941.

State	Number of properties having bushes					Number of bushes					Sprouts found and removed in the resurvey
	In cities	In country		Total properties	Cleared of bushes	In cities and towns	In country		In both cities and country		
		Escaped	Total				Escaped	Total	Found	Removed	
Colorado	31	9	52	83	85	607	14	259	506	1,312	630
Illinois	1,264	153	478	1,742	1,153	12,855	23,434	36,289	[illegible]	[illegible]	1,675
Indiana	55	36	117	172	162	263	1,7[illegible]	2,305	2,56[illegible]	2,1[illegible]	6[illegible]
Iowa	16	32	106	202	754	42	1,499	7,063	7,04[illegible]	[illegible]	615
Michigan	277	62	255	532	6[illegible]	3,370	18,242	[illegible],215	31,[illegible]	[illegible]	116
Minnesota	54	33	207	261	249	627	2,641	6,540	[illegible]	1,141	[illegible]
Montana											
Nebraska	58	6	149	167	309	287	2,[illegible]	5,[illegible]	6,168	14,671	1,8[illegible]
[illegible]	31	1	53	84	86	256	156	1,[illegible]5	2,223	2,[illegible]	235
Ohio	164	17	181	345	1,014	3,025	2,567	5,119	8,204	23,759	2,267
South Dakota	[illegible]	32	143	175	162	255	5,168	9,337	5,656	7,259	653
Wisconsin	131	120	353	450	621	1,177	54,469	55,510	63,526	4,765	4,765
[illegible]	4	0	6	10	56	14		26	40	550	56
Totals	2,674	497	2,168	4,802	5,765	22,504	92,154	154,044	156,546	184,559	21,360

Table 2. Data showing results obtained in the barberry eradication campaign from April 1, 1918 to October 31, 1921.

States	Number of properties having bushes					Number of bushes.					Sprouts found and removed in the resurvey
	In cities and towns	In country		Total properties	Cleared of bushes	In cities and towns	In country		In both cities and country		
		Escaped	Total				Escaped	Total	Found	Removed	
Colorado	1,499	19	97	1,596	1,593	19,172	1,411	3,376	22,548	22,457	3,226
Illinois	7,724	346	794	8,518	7,451	92,500	25,635	42,289	134,785	106,565	2,976
Indiana	3,136	55	470	3,606	3,571	75,288	4,173	12,439	87,727	86,295	2,460
Iowa	6,682	200	1,005	7,687	7,677	642,532	30,726	85,126	731,658	730,938	6,502
Michigan	3,863	305	3,624	7,487	5,554	39,321	76,989	131,909	171,250	119,645	172
Minnesota	2,778	215	997	3,775	3,716	588,731	53,509	152,371	741,102	740,206	15,000
Montana	194	1	45	195	194	6,577	1	2,169	8,662	8,674	4,519
Nebraska	2,973	11	252	3,225	2,900	71,287	3,125	11,938	83,225	82,864	3,217
North Dak.	454	1	145	599	599	4,080	150	3,035	7,115	7,115	450
Ohio	4,450	58	507	4,957	4,256	196,845	17,776	23,221	220,066	197,651	2,267
South Dak	381	65	287	668	565	22,223	14,407	23,659	45,882	37,464	1,562
Wisconsin	5,911	429	1,406	7,317	6,946	276,649	3,058,221	3,066,444	3,343,093	2,277,[illegible]	13,04[illegible]
Wyoming	74	1	13	87	55	3,946	1	194	4,140	1,042	240
Totals	40,075	2,306	9,640	49,715	45,036	2,039,151	3,286,720	3,562,106	5,601,257	4,418,738	55,001

The steam treatment methods have also given promising results. The object has been to devise methods for treating large quantities of grain with steam and drying with commercial grain dryers. Small models of several standard makes of machines have been used. It has been found possible to maintain a saturated atmosphere at a very constant temperature by employing very simple devices and alterations on the machines. Complete control of both loose and covered smut has been obtained without seed injury. The cost of treatment on a commercial scale will be reduced if the method continues to prove successful.

Varietal tests were not undertaken on a large scale this year, but those which were conducted show that some of the popular varieties, such as Fultz, Mediterranean, Currell, Dawson, Golden Chaff, and Goens, are very susceptible while Fulcaster, Harvest King, and Mammoth Red showed a marked degree of resistance.

Physiological studies on the parasitism of U. tritici were recently initiated. There is considerable evidence to show that infested plants do not suffer a lessened capacity to resist winterkilling.

Bunt. The past season was a very favorable one for the development of bunt in this locality. Percentages in most of the varieites were high this year as compared with almost no infection last year. About 250 varieties and strains were tested to determine their behavior toward infaction by both T. laevis and T. tritici, the two strains of the bunt fungus. Of these wheats, one strain each of Gladden and Red Hussar were free from T. laevis. Other strains showed from 5 to 70 percent or more of infection. Kanred showed a high degree of resistance to T. tritici but none of the varieties or strains was entirely free from infection. Very few varieties showed any marked degree of resistance.

The percentages of both species of Tilletia were lower in almost every case in 23 varieties of wheat sown October 12 than they were in the same varieties sown October 30. In this set of experiments the percentages of T. laevis were generally higher than those of T. tritici for the same varieties. None of these varieties was free from smut in either plat.

Flag smut. Varieties of wheat grown in the greenhouse from seed smutted with spores of flag smut Urocystis tritici showed higher percentages of infection than did the same varieties smutted and sown in the field at Granite City, Ill.

Oat smuts. Notes from the plats in which a number of spring oat varieties were being further tested for their resistance or susceptibility to infection by the two oat smuts were not completed, due to lack of sufficient help at the time they should have been taken. Unfavorable weather and destruction by birds had made it impossible to get the notes when help was available. Such notes as were taken agreed favorably with results of previous years, which were considered conclusive.

Chlorophol, a new seed disinfectant which was tested on smutted seed of A. nuda for controlling both oat smuts, gave almost perfect control with very little or no seed injury.

Barley smuts: The [illegible] for [illegible] the behavior of varieties of toward infection by the covered smut fungus were as usual unsuccessful. So far, practically all attempts at getting infection by smutting the seed at the

time of sowing have met with little or no success. Some varieties show a slight increase in the percentage of infection when the seed is smutted, while others do not. Seed of most varieties when taken from a smutty field produce some infected plants.

Smutted seed sown October 9 produced more smut than smutted seed sown October 30. However, very few varieties showed infection in either case and the percentages were low.

In the seed treatment plats hot water proved to be very effective in controlling both the smuts of barley. Formaldehyde was almost as effective as hot water in controlling the loose smut, but less effective against the covered smut. This is the reverse of what one might expect. It is more effective against covered smut in some varieties than in others.

Stem smut of rye: Seed of 12 varieties of rye were smutted with Urocystis occulta and parts of each sown October 12 and October 30, respectively. Six of these varieties showed low percentages of smut in the first seedings, while only a trace of smut was found in one variety in the late seedings. Here again the time of sowing influences infection.

Corn smut: The corn smut work this season has been confined to varietal tests. Notes taken from plants artificially inoculated and from those infected naturally show some interesting relationships between family groups and the susceptibility and resistance to smut. These notes were taken from Mr. Kyle's selfed strains.

CEREAL COURIER

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(NOT FOR PUBLICATION)

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Vol. 13 December 15, 1921. No. 31
Personnel and Field Station (Dec. 1-15) Issue.

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PERSONNEL ITEMS

Charles E. Barth, field assistant in barberry eradication in Nebraska, resigned November 20 to resume his studies at the University of Nebraska.

Benjamin F. Dittus, field assistant in barberry eradication in Nebraska resigned November 30 to resume his studies at the University of Nebraska.

Mrs. Helen B. Kinney, formerly of the Office of Cereal Investigations, but during the past two years connected with the Experiment Farm atGreeley, Colo., was transferred to the Office of Cereal Investigations on November 1. She will have charge of the office library, including the indexing and reviewing of publications relating to cereals and the preparation of illustrative material.

Julian W. Riddick, field assistant in barberry eradication in Nebraska resigned November 30 to resume his studies at the University of Nebraska.

Dr. W. W. Robbins, who has been under temporary appointment during the past three months in connection with studies of methods of exterminatin barberry bushes in escaped areas and of the control of seedlings and sprouts, has been permanently appointed as botanist, effective December 16, following certification in the Civil Service Commission as the result of a special examination.

William J. Sando, who has been under temporary appointment as field assistant during the past six months in connection with eastern wheat investigations, has been appointed as assistant agronomist, effective December 1.

Glen H. Stringfield, field assistant in barberry eradication in Nebraska, resigned November 30.

Dr. W. H. Tisdale, pathologist in charge of smut investigations, left Washington December 7, for Bluff Springs, Fla., where he expects to remain until about January 1.

The temporary appointment of William P. Walker, who has been assisting in cereal disease studies at Arlington Farm for the past two months, terminated December 10.

VISITORS.

William C. Eldridge, of Woodland, Cal., formerly scientific assistant in connection with eastern wheat investigations, and now manager of the farms of James H. Stephens, President of the Commercial National Bank of Sacramento and former President of the Rice Growers' Association, was an office visitor December 13. Mr. Eldridge says that next year his work will be entirely with rice.

Robert F. Griggs, professor of botany at George Washington University was an office visitor December 12.

Dr. Tomas A. LeBreton, Argentine Ambassador to the United States, and Carlos Vallejo, agricultural attache to the Argentine Embassy, were office visitors December 7. They were particularly interested in exhibit and demonstration material for use in presenting agricultural facts at fairs, conventions, and similar gatherings.

S. Morisawa, an insturctor in the Agricultural College of Tokyo, and now a student in the United States, was an office visitor December 14.

PUBLICATIONS.

Galley proof of Department Bulletin 1011, "Effects of Mutilating the Seeds on the Growth and Productiveness of Corn," by E. B. Brown, was read December 6.

Page proof of Department Bulletin 1014, "Effect of Time of Seeding on Germination, Growth, and Development of Corn," by E. B. Brown and H. S. Garrison, was read December 14.

A paper entitled "Ash Content of the Awn, Rachis, Palea, and Kernel of Barley during Growth and Maturation," by Harry V. Harlan and Merritt N. Pope, was published in the Journal of Agricultural Research, vol. 22, no. 8 p. 443-449, dated November 19, 1921.

A paper entitled "Genetic Behavior of the Spelt Form in Crosses Between Triticum spelta and Triticum sativum," by Clyde E. Leighty and [illegible] Boshradian, was published in the Journal of Agricultural Research, vol. 22 no. 7, p. 335-364, dated November 12, 1921.

Second page proof of Department Bulletin 976, "Cultural Experiments with Grain Sorghums in the Texas Panhandle," by Benner H. [illegible], was read December 3.

Abstracts of papers entitled "Nocturnal Conidiophore Production by Species of Sclerospora," and "On the Control of the Philippine Downy Mildews of Maize," by Dr. W. H. Weston, Jr., have been approved for publication. The paper on Nocturnal Conidiophore Production by Species of Sclerospora is to be presented before the Mycological Section of the Botanical Society of America, and the one on Philippine Downy Mildews before the joint session of the Mycological Section of the Botanical Society of America and the Phytopathological Society at their Toronto meetings.

FIELD STATION CONDITION AND PROGRESS.

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens, and Substations (R. R. Childs). Seeding of all fall cereals was completed about October 20 and good stands were obtained.

Seeding at the Tifton Substation was completed on October 26. Results from the varietal experiments at Tifton follow. Wheat, C. I. No. 4159, an unnamed variety originally from Peru, made an excellent showing and was almost free from rust, which was very bad on all other varieties.

The following are the yields in bushels per acre of wheat, oats, and rye in varietal experiments at the Tifton (Ga.) Substation in 1921. These are average yields of 2 fiftieth-acre plots, except that of Georgia Red wheat, which is the average of four plots:

Wheat	Bu. per acre.	Oats	Bu. per acre.	Rye	Bu. per acre.
Georgia Red 650-17	29.5	Hundred Bushel	62.50	Abruzzes	38.30
C. I. No. 4159	26.5	Patterson	59.70	So. Georgia	35.10
Blue Stem 600-4	17.30	Appler 200-2	55.30	Virginia	21.50
Fulcaster C.I.No.2980	14.30	Fulgham	55.10	Rosen	6.10
Fulcaster	12.00	Cobers Appler	54.30		
Mammoth Red	12.90	Bancroft	50.10		
Bearded Purple Straw	11.70	Burt	43.40		
Red May	11.40	Texas Rustproof	36.80		
Dietz Mediterranean	10.90	Early Ridge	35.30		
Leap Prolific	9.50	Culberson Sel.	17.20		
		Culberson	15.40		
		Winter Turf	12.85		

SOUTH CAROLINA

Pee Dee Substation, Florence (Hugo Stoneberg). No report

VIRGINIA

Arlington Farm, Rosslyn, (J. W. Taylor) No report.

NEW YORK

Cornell University Experiment Station, Ithaca (H. E. Lowe). No report.

Rhinebeck (Corn Investigations, L. S. Mayer), No report.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Crowley Rice Station, Crowley (J. Mitchell Jenkins). No report.

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler). (Dec. 1) The results of our preliminary test of the effects of various formaldehyde treatments for oat smut are reported below. The object of this test was to obtain preliminary information on the effect of the various formaldehyde treatments now recommended by different stations on the yield of oats, aside from their effect in controlling smut. The treatments were therefore applied to burt oats, which are commonly free from smut under our conditions. No smut was found in this plat either in the treated or the untreated rows. Five treatments were used in comparison with an untreated check, and the six lots of seed were each sown in single rod rows replicated twenty times. The order of treatments was the same in each series. The yields were as follows:

Method	Yield, bu. per acre.
"Illinois" (Ill. Circ. 240)	50.3 ± 0.96
Old treatment, oats covered 14 hrs. (Farmers' Bull. 939)	54.6 ± 1.00
No treatment	48.3 ± 1.09
Old treatment, oats covered 5 hrs.	54.1 ± 1.00
"Iowa" treatment (Iowa Circ. 45)	52.9 ± 0.97
Atomizer method (Phytopathology 7, 381-383)	53.9 ± 1.31

None of the treatments noticeably affected the germination of the seed as determined either in germination tests or from the stands in the field. Apparently significant increases in yield were caused by most of the treatments, though of course several more trials must be made before any definite conclusion can be drawn.

IOWA

Iowa State College, Ames (Barberry Eradication, R. E. Porter) The field work on the eradication campaign was completed November 13, at which time about 16 counties were completed in southwestern Iowa, making a total in this State of 33 counties in which a farm-to-farm survey has been conducted. The work was begun April 1, using two men. Practically all of the work done during April and May was resurvey in the area covered in 1920. In June, the original survey was begun in Calhoun and Monona counties. From July 1 to September 13 ten men were employed, using 5 cars. Beginning October 1, only two crews were maintained.

The section covered in 1921 was about equal in area to that of last year, but the topography was of such a nature that it was not possible to make the progress that was made last year. One more car and two more men were used, with a corresponding increase in expenditures.

During the season of 1921, a total of 7,127 bushes were found and 11,937 removed. The difference of 4,810 bushes represents bushes found in 1920 and not removed. There were also 3,619 sprouts found and removed on resurvey.

Approximately one-third of the State has been covered, representing two years' work. At that rate, it will take four years more to complete the original survey.

ILLINOIS

Funk Brothers Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert) (Dec. 1.) The office of Cereal Investigations cooperated with the University of Illinois in putting on an educational exhibit at the National Hay and Grain Show at Chicago.

Prof. G. H. Dugan of the University of Illinois, under date of November 21, writes: "Corn harvesting on the Agronomy Field will be well advanced by the end of November. To date, the harvesting has included husking, tagging and weighing of more than 7,000 individual ears, and the recording of about 1,000 field weights from separate plats. About half of the corn appearing on this experimental field includes investigations conducted in cooperation with the Office of Cereal Investigations."

The outlying plats other than those at Bloomington or Urbana have all been harvested and some of the data have been summarized. Ear-worm injury has been quite severe in all of the plats. The worms seem to have attacked the various corn selections to about the same extent. However, the type of corn that has consistently shown the most disease resistance in Illinois is injured much less than the other types because it does not have as much ear rot following the worm injury. Some other results from the plats are as follows:

Grundy Co. Plat. The following yields were obtained from diseased and nearly disease-free seed selected from a Grundy county farmer's own carefully selected seed corn last spring:

Diseased seed, yield of marketable corn 48.2 bu., total yield 58.3 bu.
Nearly disease-free seed, yield of marketable corn 62.2 bu., total yield 70.3 bu.

Cass Co. Plat. Horny seed outyielded starchy seed by 13.4 per cent. Fusarium-infected seed caused a reduction of 14.2 per cent in yield, and Diplodia-infected seed caused a reduction of 17.8 per cent in yield as compared with the yield from disease-free seed of the same strain of corn.

LeWitt Co. Plat. One of the interesting things noted here was a test planting of the corn that took first place in the 10-ear, yellow dent class of the DeWitt County Utility Corn Show against a sample in the same class that took no prize. The yields were as follows:

First prize sample, marketable corn 45.9 bu., total yield 53.6 bushels.
No prize sample, marketable corn 34.3 bu., total yield 43.9 bushels.

Fusarium-infected seed dropped 7.6 per cent and Diplodia-infected seed dropped 40.9 per cent in yield as compared with disease-free corn.

Macon Co. Plat. A number of tests including Fusarium and Diplodia infected seed were conducted. Data incomplete and not summarized.

Sangamon Co. Plat. Diseased and nearly disease-free seed selected from a Sangamon County farmer's own carefully selected seed corn yielded as follows:

Moderately diseased corn, 69.34 bushels per acre.
Nearly disease-free corn, 80.95 bushels per acre.

Knox Co. Plat. An experiment testing the importance and significance of various physical characters of seed corn ears in relation to disease resistance was conducted. Corn has been harvested but is not yet shelled or tested for moisture, etc.

Peoria Co. Plat. An experiment was conducted on Diplodia and Fusarium infected seed, as well as a test on diseased and disease-free seed, selected by us from seed corn picked by a Peoria County farmer. Fusarium-infected seed caused a reduction of 3.1 per cent in total yield and Diplodia-infected seed caused a reduction of 23.2 per cent as compared with the yield from disease-free seed of the same strain of corn.

Diseased seed from the Peoria County farmer's own selected seed dropped 18.6 per cent in yield of marketable corn and 17.5 per cent in total yield below the nearly disease-free seed selected from the same farmer's corn.

All these outlying plats were so arranged as to run the different seed plats across a number of different soil fertilizer plats. With a few exceptions all were arranged as follows: No soil treatment, 4 tons limestone per acre, no soil treatment, 1 ton rock phosphate per acre, no soil treatment and 4 tons limestone plus 1 ton rock phosphate per acre. In addition, acid phosphate and bone meal were used on a few of the plats. One of the objects was to determine whether these fertilizers affected the relative yields from good and diseased seed. The results showed that none of the fertilizers diminished the importance of using good, disease-free seed corn.

Granite City, Ill. (R. W. Webb). The series of plantings of wheat to determine the effect of time of sowing on the development of flag smut was completed, November 23.

State Entomology Building, Urbana (Barberry Eradication L. R. Tehon) Dec. 9.) Following the sending out, early in November, of individual requests for the removal of barberry bushes, reports were received which showed a total of 8,000 bushes removed from 301 properties. Lake County comes first with 3,316 bushes removed from 88 properties, while Cook County shows the removal of 2,213 bushes from 148 properties. In DuPage County, 1,925 bushes were removed from 47 properties; in Kane County, 528 bushes from 12 properties; in McHenry County, 15 bushes from 5 properties; and in Knox County a single bush was removed.

INDIANA

Purdue University Agricultural Experiment Station.

(Corn Root, Stalk, and Ear Rots, G. N. Hoffer). (Dec. 8). The improved rag-doll method of testing seed corn for germination and disease was demonstrated at the International Hay and Grain Show at Chicago, November 26 to December 3. The demonstration was a part of the big exhibit shown by the U. S. Department of Agriculture. The demonstration material was prepared at the Purdue University Agricultural Experiment Station where cooperative investigation of corn root rots is centered, and was in charge of Dr. G. N. Hoffer.

The method was demonstrated satisfactorily to hundreds of interested parties, and made its special appeal to county agents in attendance. The larger size germinator box will be installed at many places for community testing of seed corn. Blue prints and specifications for its construction were given to all parties who will actually undertake the work.

The Hay/Grain Show was a distinct success and the types of corn which won first places in the different regions were good examples of types which growers should select.

(Leaf Rust Investigations, H. S. Jackson and E. B. Mains). No report.

Purdue University College of Agriculture (Barberry Eradication, R. J. Hosmer.)(No report)

OHIO

College of Agriculture of Ohio State University, Columbus (Barberry Eradication, John W. Barringer) (Dec. 8) Active field work for the season was brought to a close on November 28. The winter months will be spent in tabulating and summarizing results. It is also planned to increase our publicity and educational activities.

In November, 88 barberry plantings containing 2,801 bushes were found on original survey. On resurvey, 33 plantings containing 1,299 bushes were located during the current month. Of these numbers, 121 plantings consisting of 1.716 barberries were destroyed. Seven escaped locations with an aggregate of 1,998 bushes were found in November, most of these bushes being in a single location about ten miles west of Toledo. Some of the bushes are the largest escaped barberry bushes discovered in Ohio to date.

Considerable time has been spent recently in compiling data and preparing summaries for an annual report to be submitted in the near future to the Office of Cereal Investigations.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy) (Dec. 7) The specimens of the Japanese and Common barberries, together with sections of infected grains, mounted on the printed cards recently furnished by the Department, have been found to be an excellent means of developing the interest of high school pupils in the subject of black stem rust. Half of the mouhted cards were mailed to selected high schools and the balance is being retained to meet future demands.

Statistics have been compiled and maps are being made to present the results of Michigan's barberry campaign to the recently created State Department of Agriculture.

Barberry plants have been placed in the greenhouse so that they will be ready for demonstration purposes during the coming Farmers' Week, which is to be held at the college the last of January.

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson). No report.

Department of Agriculture, State Capitol, Madison (Barberry Eradication, Noel F. Thompson). (No report).

MINNESOTA

College of Agriculture, University Farm, St. Paul (Barberry Eradication, Leonard W. Melander). (Dec. 12) Our field work was terminated about November 9. The last day of the field work was rather disagreeable on account of the snow. The total snowfall during November was 19.5 inches which is the heaviest recorded for the month since the Weather Bureau established stations in the State.

During the month, 206 bushes were found on 5 properties and 710 bushes were destroyed on 12 properties. No more counties were completed, so our total of counties surveyed this year still remains at 36, with a total of 46 for the entire campaign.

Educational and publicity work has already been started for next year. An effort is being made to have Farmers Bulletin 1058 read to the rural school pupils in 16 counties where we are going to work next year. A barberry article was sent out through the Publications Office of the Minnesota station, which was put out in plate form to about 50 rural newspapers.

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman) No report.

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger). (Dec. 2.) There was no precipitation during November. As the latter part of September and October were dry, the situation is rather serious for wheat. Wheat that was sown during September came up and has remained alive and that is about all. The wheat on this station that I have examined has not developed any permanent roots but is existing from moisture obtained through the temporary roots. The same condition appears to exist generally in this section. Naturally if the wheat is pastured, many plants will be pulled up by the stock.

Thrashing for the dry-land project will be completed today or tomorrow and the cereal project thrashing will then be begun. Maximum temperature for the last half of November was 73° on the 25th; minimum, 15° on both the 19th and 23rd; precipitation, none.

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker) (Nov. 21). The weather during the first week in October was clear and warm, with no rain except for a few scattered showers. Light frosts occurred in some parts of the State. Wheat seeding was completed in the western half of the State and was in full swing in the eastern counties. Sorghums for the most part were fully matured and the fourth cutting of alfalfa was being made.

During the second week in October there was no rain except for a few light and widely scattered showers. This was the third dry week for the State as a whole and the fourth week without helpful and needed rains in the western half. A killing frost occurred on October 12. Wheat was suffering from drought in the central and western counties. The seed sown in many fields did not germinate because of dry soil, while the young plants in other fields were dying for lack of moisture, Some fields were being reseeded. Wheat was reported as being in much better condition in the eastern counties.

During the third week in October, Indian summer weather prevailed with temperatures of 5° to 12° above normal. Continued drought in central and western counties caused further injury to wheat. Late-sown wheat did not germinate and much of the early-sown wheat had stopped growing and was turning yellow. Wheat was in better condition but needing rain in the eastern third of the State. Corn husking was becoming general in the important corn-producing counties.

During the fourth week in October eastern Kansas was favored with fine rains, but most of the central and western counties were still very dry. A severe freeze occurred on October 27 in the western counties. Wheat was greatly benefited where rains fell but in the western counties was still showing the effects of drought. Some seed was still lying in the dust in which it was sown, while in other fields plants were turning yellow and dying.

At Manhattan, maximum temperatures of 90° occurred on October 6 and 9 and minimum temperature of 27° on the 12th. The mean maximum temperature for October was 75.67° and the mean minimum temperature was 46.48°. Measurable precipitation fell on five days and totaled 1.38 inches.

Doctor H. H. Love of Cornell University spent the week of October 31 at the college and delivered a series of lectures on biometry to members of the experiment station staff. He also spoke to the members of the Klod and Kernel Klub on plant breeding work at Cornell and to the genetics seminar on research in plant breeding.

Professors Call and Salmon attended the meetings of the American Society of Agronomy at New Orleans, where Professor Call was elected President of the Society and Professor Salmon was continued as a member of the Committee on Standardization of Field Experiments.

Professor Salmon will leave on November 22 for Chicago to represent the Kansas Crop Improvement Association at the International Hay and Grain Show.

Mr. Carl Bower is now engaged in classifying the samples of ear corn harvested from the various corn-disease plats and in tabulating the field data. It is expected that germination tests will be started about December 1. The plats of Pride of Saline corn planted from relatively disease-free ears made a significantly higher yield than those planted from diseased ears, while in the case of Midland Yellow Dent the difference in yield of the two plats was probably not significant.

Good stands were obtained in the winter wheat nursery.

Greenhouse plantings for the present season include a large number of resistant and susceptible varieties of winter wheat being used in Hessian fly experiments by Professors Salmon and McCulloch. A large number of hybrids between resistant and susceptible varieties are also being studied. Mr. C. O. Johnston is growing about 600 second-generation hybrids of Kanred X Marquis which will be used in the study of the inheritance of resistance to leaf rust. Studies are being continued of the hybrids between winter and spring wheats and most of this year's material is of the grass-like or "tuft" hybrid types and dwarfs which have occurred in earlier generations of these crosses. Professor Sewell is continuing his crop sequence studies and is growing winter wheat in quite a large number of containers, some of them containing soil from a corn field and others soil from a sorghum field. More than 100 samples of inspected seed of Kanred wheat will be tested for rust resistance for the Kansas Crop Improvement Association. About 50 seedlings of each sample will be grown in direct comparison with pure lines of Kanred and of a susceptible variety used as a check. A strain of stem rust is being used to which Kanred is resistant. It is believed that this test will afford accurate and dependable information on the purity of the commercial sources of Kanred wheat.

Hays Branch Station, Hays, (A. F. Swanson)(Dec. 3.) After a stay of about three weeks in Manhattan I returned to Hays November 26 to take stand counts of the wheat experiments and other notes. Border fields were roughened and weeds along the fence row burned. About all that can now be done on the project to prevent soil blowing has been accomplished.

Yesterday and today we were favored with from 5 to 6 inches of snow which will amount to about 0.24 inch of water. This is the first measurable moisture since August 13 and 14. No doubt the wheat will receive some benefit from this moisture.

The wheat prospects for Ellis County has been put as low as 22 per cent. Much of the wheat is not up and considerable wheat has died during the drought.

COLORADO

Agricultural College, Fort Collins (Barberry Eradication, C. D. Learn, Col.) No report.

Akron Experiment Farm, Akron (F. A. Coffman) (Dec. 5.) The first half of the month was warm and mild at Akron. A slight snow flurry was experienced November 8, but for the greater part of the first two weeks the temperatures were comparatively high. On November 16, a 2 inch snow occurred. The snow was extremely wet and no blowing resulted. Cooler temperatures prevailed for the two days following this storm. During the latter half of the month the weather was cold and cloudy with heavy frosts at night.

The winter wheat in the section in which the Akron Field Station is located is looking especially good for this time of the year. The wheat which had not emerged prior to the storm of October 25 has emerged to good stands. The stands of the later sown wheat are considerably better than those in the early-sown plats. Moisture conditions are very favorable and the wheat is going into the winter in much better condition than what might have been expected from the prospects on October 25.

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel). No report.

WYOMING

Cheyenne Experiment Farm, Cheyenne (A. L. Nelson) (Nov. 24.) The weather continues very dry, which condition has practically killed all winter wheat in this region. There is a considerable quantity which did not germinate and is apt to produce a better crop than that which germinated.

Following are the acre yields of the spring wheats. It should be noted that the cool, wet spring favored the Prelude variety. The cool weather in June caused it to stool more than usual and its early maturity was in its favor, due to the continued drouth since July 4.

Spring Wheat Yields at Archer, Wyo., 1921.

C.I.No.	Common Spring	Yield
	Fife:	
3697	Power	10.4
3022	Rysting	10.1
3641	Marquis	14.4
	Bluestem:	
2874	Haynes	[illegible]
	Preston:	
4324	Pioneer	11.8
2597	Erivan	10.2
3031	Preston	11.7
4141	Converse	12.5
6248	Kota	11.3
	Miscellaneous:	
4377	Norka	12.0
2398	Galgalos	10.3
4335	Huron	11.2
4323	Prelude	14.0
4800	Kitchener	12.5
6047	Ruby	9.3
6233	Laramie	9.6
4154	Ladoga	11.1
4733	Hard Federation	13.9

C.I.No.	Durum	Yield
	Kubanka:	
1516	Kubanka	12.8
1440	Kubanka	15.6
4063	Kubanka	15.5
4004	Arnautka	11.7
1493	Arnautka	9.3
1593	Marouani	8.8
1520	Beloturka	16.4
3320	Monad	16.0
5284	Acme	17.6
5295	Bufora	14.9
5296	Mindum	14.3
	Pelissier	
1584	Peliss	15.1
	Red Durum:	
3322	D-5	16.4
	Miscellaneous:	
6227	Golden Ball	11.2
	Sevier	11.3

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, Ralph U. Cotter) (No report).

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, Lynn D. Hutton). (Nov. 28) Field work in South Dakota was completed November 26. November 20 the leaves had not fallen from the barberries and they were easily distinguished among the barren shrubbery. Since then the leaves have fallen and the work has slowed up considerably. Only one team remained in the field during October and November. Since October 1, 25 townships have been finished with a total of 1.263 bushes located. Since July 1, 1921, ten and a half counties have been completed with 127 locations and 6,977 bushes. Nearly all the resurvey work has been allowed to wait until spring when the new shoots will show the live roots.

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College, [illegible] (Mantell). (Nov. 30) The temperature has varied this month from [illegible] degrees on the 19th to well above 30 degrees F. today.

Greenhouse work was begun a few weeks ago. The host range and pathogenicity of certain fungi which were obtained from flax plants are being determined.

The State Teachers' Convention was held in Fargo November [illegible] to [illegible], inclusive, during which time we had several visitors. Among others who visited the station were Dr. Abbott and others from the North Dakota State University and a few prominent educators from outside the State.

State College of Agriculture, Agricultural College (Barberry Eradication, George C. Mayoue). (Dec. 12) During November, 41 sprouts on 19 properties in the rural districts of Cass County were located and destroyed. Of these 14 were located 5 miles south of Amenia. They average in height from a few inches to 2 feet. It is possible that these sprouts had much to do with the rust infection which was noted by the members of the Phytopathological Society who made a tour in that section of the county on July 22.

Demonstrations and lectures on the identification and eradication of the common barberry were given in twelve rural schools.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.) [illegible] (Dec.1.) The last half of November has been generally cloudy and unusually cold for this time of year. From November 15 to 27 the temperature did not rise above 27° and on six of these days temperatures below 0° were recorded.

Maximum temperature for the period was 39° on November 28 and 30; minimum, -15°. November 18; precipitation, 0.18 inch.

On November 17, 150 seeds of first-generation hybrids and parent plants of flax were sown one seed to a pot in the greenhouse. Of these, 111 have emerged to date. About half of those that came up are being given a longer day by the use of electric light. In the past it has been difficult to get seed from flax grown in the greenhouse during the winter in time for sowing the following spring, because the flax would not bloom until the longer days of spring. It is hoped to mature them in good time by the use of artificial light.

In figuring the climatic data for the past season it is interesting to note that, though this was about the driest growing season since 1916, the total precipitation for the first eleven months of 1921, 14.99 inches, is over an inch more than that for the same period in any previous year since 1915.

Dickinson Substation, Dickinson (Ralph W. Smith) (Dec.1) The mild fall weather continued till November 7, when snow and freezing weather set in and the ground has been freezing ever since. Several light snowstorms have occurred some of which melted and soaked into the ground. The maximum depth of snow during the month was about 5 or 6 inches.

The winter grain has been well protected so far, having some snow over it ever since the ground froze. The temperature has been considerably below normal during most of the month, the minimum being -22°. The precipitation for the month was 1.05 inches.

The low price now paid for durum wheat, if continued, will tend greatly to discourage the growth of that crop in this State and elsewhere. A large number of farmers in this section had recently begun growing durum on account of its rust resisting qualities and superior yield.

Progress is being made on the annual report of Cereal Investigations.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May) (Nov. 28) Since the last report we have had considerable snow and cold weather. The snowfall measured about 12 inches, which in the form of precipitation measured 1.15 inches. Most of this precipitation fell from November 19 to 23, which was also the period of low temperatures. The snow is melting very slowly and the water is absorbed by the soil as rapidly as the snow melts. Fall-sown wheat will be greatly benefited by the moisture, as we had scarcely any precipitation during the month of October.

The minimum temperature since the last report was 26° on the 19th and the maximum 47° on the 28th. The minimum temperatures were 0 on November 18 and -26, -15, -14, -14, and -4 on the five succeeding days.

The straw on the furrow-drill straw-mulch experiments has not yet been spread, but I expect to begin spreading it tomorrow. The straw has been weighed, hauled, and piled at the end of the respective plats but the spreading has been delayed to await favorable weather conditions to avoid blowing.

WESTERN BASIN AND COAST AREAS
(North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (A. E. McClymonds) (Dec. 1) The month of November was spent in finishing the field work. All of the plowing is finished, the machinery is all put away, and everything is in shape for the winter. The bottoms of the irrigation ditches were cleaned and the banks built up. Some leveling was done on some waste land along the main ditch on the east side of the station. This will be seeded to a tame grass pasture mixture for a sheep pasture next summer. The ends of series 100, 200, 300, 400, and 500 were plowed in preparation for an experiment on tame grass pasture mixtures. During the month, 10,000 pounds of common alfalfa seed and 3,000 pounds of Grimm alfalfa seed were cleaned for farmers of this section.

The Superintendent made a trip to the High-Altitude Experiment Station at Felt. An experiment on rotation of crops was outlined for the dary farm and recommendations were made for a tame grass pasture experiment for the irrigated farm. A dry-land pasture experiment was outlined with Rosen rye, sweet clover, and bromegrass. Several rates of seeding will be used and different dates of seeding will also be made.

This has been an excellent month for field work. The weather has been good and the ground is not frozen yet.

OREGON

Sherman County Branch Station, Moro (D. E. Stephens). No report.

CALIFORNIA

Rice Field Station, Biggs (J. W. Jones) No report.

Plant Introduction Station, Chico. (V. H. Florell). No report.

Agricultural Experiment Stations, Davis and Berkeley (F. N. Briggs and W. W. Mackie.) No report.

C E R E A L C O U R I E R

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PERSONNEL ITEMS

Dr. C. R. Ball, Dr. H. B. Humphrey, Dr. Annie May Hurd, Dr. C. E. Leighty, and Mr. F. D. Richey left Washington December 26 for Toronto, Ontario, to attend the meetings of the American Association for the Advancement of Science and affiliated societies, particularly the meetings of the American Phytopathological Society, the Botanical Society of America, the American Society of Agronomy, and Section O, (Agriculture) of the American Association for the Advancement of Science. Other full or part time employes of the office who were in attendance included O. S. Aamodt, Dr. H. S. Jackson, Dr. A. G. Johnson, Dr. H. H. Love, Dr. E. B. Mains, and Dr. E. C. Stakman. Several papers were presented by various members of the office staff before the American Phytopathological Society and the Mycological section of the Botanical Society of America, as reported in previous issues of the Cereal Courier. In addition to these papers, Dr. C. R. Ball presented an illustrated paper before Section O, Agriculture. "Some Economic Aspects of the Wheat Situation." The Washington members of the office force who were in attendance at the meetings returned December 31, accompanied by Dr. E. C. Stakman, who will be in Washington for a month in connection with the Plant Disease Survey.

L. M. Jeffers, formerly with the Division of Grain Supervision of the Bureau of Markets at Portland, Oregon, and for the past three years with the Pacific Grain Company at Portland, is now chief grain and warehouse inspector for the Bureau of Standardization of the California State Department of Agriculture.

Jenkin W. Jones, assistant agronomist in charge of the Biggs Rice Field Station, Biggs, Cal., arrived in Washington December 24 to consult with project leaders and to prepare his annual report and a manuscript on the rice experiments in California.

The temporary appointment of Mrs. Edith Seymour Jones was terminated December 23, she having completed her work in connection with the [illegible] on the influence of soil moisture, temperature, and other factors on the investigations of the loose and covered smuts of oats.

The temporary appointment of Ferdinand S. Wolfert, field assistant in the investigations of cereal smuts, particularly flag smut, was terminated December 31.

VISITORS.

Demetrius Borodin, agricultural explorer for the Russian Bureau of Applied Botany, with headquarters in New York City, was an office visitor December 15 and 23, for the purpose of consulting with project leaders with reference to varieties of cereals suitable for sowing in the famine district of Russia, and sources from which seed of these varieties can be obtained in quantity. Mr. Borodin also consulted with Dr. Humphrey with regard to the distribution of stripe rust in the United States.

L. R. Hartill, who expects to sail about January 15 for Armenia, where he will have charge of farming operations for the Near East Relief on about 120,000 acres in the vicinity of Erivan, was an office visitor December 16, when he consulted with project leaders with regard to suitable varieties of cereals for sowing in Armenia and the sources from which they can be obtained.

M. M. Mahoney, Canadian representative at the British Embassy, was an office visitor December 16, when he consulted with Mr. Tarburton regarding methods of extending relief to dry farmers.

PUBLICATIONS

Page proof of Department Bulletin 1011, "Effects of Mutilating the Seeds of the Growth and Productiveness of Corn," by E. B. Brown, was read December 28.

Department Circular 188, "Progress of Barberry Eradication," by Dr. F. E. Hemmton, was received from the Government Printing Office on December 19.

Galley proof of Department Bulletin 1039, "Experiments with Cereals on the Bellefourche Experiment Farm," by John H. Martin, was read December 29.

FIELD STATION CONDITION AND PROGRESS.

HUMID ATLNATIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens, and Substations (R. R. Collins) No report.

VIRGINIA

Pulliston Farm, Rosslyn, (J. W. Taylor) (Dec. 16) The cereals in plot and [illegible] are in excellent condition to stand the winter, as the weather has prevented excessive fall growth. Practically no leaf rust has developed.

The plots sown with seed treated for smut control appear promising. The seed disinfectant, chlorophol, has not injured the germination or vigor of wheat, oats, or barley in the least, which is not the case where either formaldehyde or hot water was used as the treating agent.

The effect of light and temperature upon wheat and barley is to be studied on an extensive scale in the greenhouse by Drs. Laugner and Marlan. Three houses with beds 50 feet long in each have been sown with different varieties of these crops.

NEW YORK

Cornell University Experiment Station, Ithaca (H. H. Love) (Dec. 17) During the early part of December, seeding in the greenhouse was completed, new hybrids and some varieties for crossing being sown. We will cross the high-yielding Cornellian oats with Selection 343, a good white oat with an exceptionally stiff straw. We also expect to cross another new selection from the National variety which is showing up especially well in yield with Selection 343 and Cornellian.

In the case of wheat, some new crosses are to be made between Kanred and some of the new hybrids which have especially stiff straw, in an effort to obtain some rust resistant sorts, and we will make some other conbinations which should give us better practical strains. In connection with the genetic studies in wheat, two crosses are being grown in the greenhouse. One of these is the common wild crossed with Kubanka and the other the synthetic wild crossed with Kubanka, the purpose being to determine whether the synthetic wild has the same genetic constitution as the common wild of Palestine.

Mr. Craig is now taking notes on some Polonicum crosses in which we are studying the inheritance of length of kernel, length of glume, and the relation between length of glume and pubescence.

Work is progressing with the annual report. The yields for the past year are being assembled and comparisons made with the check.

The weather during the fall has been rather favorable for fall seeding and our wheat nursery as well as the plats have gone into the winter in good shape. The hybrid nursery also was in good shape when cold weather came on.

Plans have been completed and approved for the erection of a field house for the Department of Plant Breeding at the cost of about $12,000. This house will contain a large storage cellar, a seed room, a well equipped series of drying compartments, a two-floor compartment 30x100 feet for the hanging and storage of crops to be thrashed, and an annex 20 x 30 feet for the thrashing machine. It is hoped that this building will be ready for use for next year's crop. A building has been completed in the Plant breeding Garden which contains a drying compartment and also a shed for hanging and storage of hybrid material. This, with additional land very suitable for experimental purposes, has added a great deal to the physical resources of the Department.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Crowley Rice Station, Crowley (J. Mitchell Jenkins). No report.

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler). (Jan. 3.) The leading varieties of wheat in our preliminary varietal trials of the past season are shown in the table below. Ninety-four varieties were grown, each in four distributed plats of five rows each. Comparative yields were determined from the yield of the three interior rows of these plats. The average yields of the ninety-four varieties varied from 19.4 to 10.7 bushels. The check variety, Poole, was grown in every sixth plat, and the probable error of a single plat yield determined from the eighty check plats was 9.78 per cent. The probable errors of the average yields of four plats given below are therefore presumably 4.89 per cent.

Variety	Yield	Variety	Yield	Variety	Yield
Farmers Friend	19.4	Velvet Chaff No.2	18.9	Mich.Wonder No.54	18.
New York 123-32	19.3	Mich.Wonder No.8	18.5	Fulcaster	18.
34B-2a	19.1	Fulcaster 8-y	18.4	Mich.Wonder No.211	18.
Mich.Wonder 221	19.1	Mediterranean No.17	18.4	Fulcaster (Outl)	18.
		Mich. Wonder No.53	18.4		

Among the ninety-four varieties included there was some relation between earliness and yield. The coefficient of correlation for date of heading and yield was -.331 ± .62, and for date of maturity and yield -.419 ± .057. A much closer relation was shown in the preceding season in which ninety-four varieties were also included. A few of these were not the same varieties as were grown in 1921. The coefficient of correlation for date of heading and yield was -.511 ± .051, and for date of maturity [illegible] yield -.642 ± .041.

IOWA

Iowa State College, Ames (Barberry Eradication, R. H. Porter) No report.

ILLINOIS

Funk Brothers Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert). No report.

State Entomology Building, Urbana (Barberry Eradication L. R. Tehon) (Dec. 17) The month of December marks the close of a very successful year for the Barberry Eradication Campaign in Illinois.

We have devoted a great portion of the month to the preparation of [illegible] reports and compilation of data for the calender year of 1921. However, we have succeeded in securing the removal of 332 barberry bushes from 21 properties, these properties being located in Lake, Cook, DuPage, and Kane counties.

INDIANA

Purdue University Agricultural Experiment Station. (Corn Root, Stalk, and Ear Rots, G. [illegible] Hoffer) No report.

Leaf Rust Investigations, H. S. Jackson and E. B. Mains. No report

Purdue University College of Agriculture (Barberry Eradication, A. J. Rosser). (No report.)

OHIO

College of Agriculture of Ohio State University, Columbus (Barberry Eradication, John W. Barringer) No report.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy) (Dec 16) A considerable part of December was spent in preparing material for use in the barberry demonstration which is to be given during the coming Michigan Farmers' Week. Maps of the counties in which the farm-to-farm surveys have been completed have been mounted. The maps show the exact location of the findings, the number of bushes found and information upon the amount of rust occurring. The interest of the short-course students has been aroused to the extent that many of them are assisting in preparing the material for the demonstration and many of them will be in attendance at the barberry booth during the week. The majority of them have been keen observers and they will be of considerable assistance in bringing out the information concerning their respective communities. Preparation have been made for showing the barberous barberry film at stated times during each day.

Most of the bushes which were recently dug and brought into the greenhouse have produced many leaves, but it is plainly noticeable that the bushes which were etherized have advanced more readily than those which were not treated.

The requests for material for use in the high schools have been more numerous this winter than during past years, which either indicates that a more detailed study of the rust is being made or that it is more difficult for the instructor to obtain material for class use.

Several wild locations in Washtenaw County were visited during the month, and in each case the farmers have carried out their promises that they would make special effort to clean out the barberries on their farms when they had their fall work done.

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson). No report.

Department of Agriculture, State Capitol, Madison (Barberry Eradication, Noel F. Thompson). No report.

MINNESOTA

College of Agriculture, University Farm, St. Paul (Barberry Eradication, Leonard W. Melander.) No report.

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman) No report.

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger) (Dec. 16) Moisture conditions are about the same as two weeks ago. While there has been several spells of measurable moisture it was so slight that it did very little good. Wheat is attempting to develop some permanent roots but the soil is so dry that they cannot make headway.

Thrashing of the sorghum plats has been under way this month. About 35 plats remain to be thrashed, of which 16 are in the shock being dried at present. Grain yields can be given at this time for the rate-of-seeding experiment with Sunrise kafir, these being the only plats from which the seed has been fanned and weighed to date. There are about 50 other plats which have been thrashed but these have not been cleaned or weighed, as we have been rushing the thrashing rather than take time to obtain the yields of grain.

The yields of the rate-of-seeding and method-of-spacing experiments with Sunrise kafir are as follows:

Plat	Distance in row.	Spacing	Yield per Acre.
1	6 inches	Single-row	42.5
3	12 inches	Single-row	41.7
5	18 inches	Single-row	40.[illegible]
7	24 inches	Single-row	34.3
9	30 inches	Single-row	31.3
2	3 inches	Double-spaced	33.[illegible]
4	6 inches	Double-spaced	34.6
6	9.5 inches	Double-spaced	35.3
8	12 inches	Double-spaced	27.1
10	15 inches	Double-spaced	27.2
11	16 inches	Two rows, skip one.	35.6

The weight per bushel was 61.5 pounds.

Mr. J. W. McColloch of the Kansas Experiment Station visited the Station on the 14th to determine if insects were injuring the wheat in any way. No insect injury was found. Maximum temperature for first half of December, 68° on December 15; minimum, 17° on the 4th. Precipitation 0.11 inches in four showers or snows.

(January 2.) Moisture conditions have not improved since the last report. Prospects for a wheat crop are not very bright.

Thrashing and fanning of the sorghums is completed. The yields as a whole are the most satisfactory in the history of this station. The yields of the kafir rate-of-seeding and spacing experiments were given in the last report. Other yields of grain sorghums are as follows:

Rate-of-seeding and Method of Spacing Experiments with Dwarf milo.

Plat	Spacing between plants.	Spacing between rows.	Yield per acre.
1	6 inches	3.5 feet	45.5
3	12 inches	3.5 feet	57.4
5	18 inches	3.5 feet	57.1
7	24 inches	3.5 feet	53.4
9	30 inches	3.5 feet	48.3
2	3 inches	7.0 feet	46.6
4	6 inches	7.0 feet	53.2
5	9.5 inches	7.0 feet	50.4
8	12 inches	7.0 feet	50.3
10	15 inches	7.0 feet	44.[illegible]
11	16 inches	Two rows 3.5 apart, then skip one	56.0

The above plats were seeded on June 10. The weight per bushel was 59 and 60 pounds.

Grain Sorghum Varietal Experiments:

Variety	C.I.No.	Yield per acre.
Durra-milo Group:		
Dwarf milo,	312	46.2
Dwarf milo,	339	45.0
Dwf white milo,	627	42.0
Std. milo,	234	43.1
Std. white milo,	352	37.9
Early white milo,	440	36.4
Feterita,	182	43.9
Feterita, spur,	623	44.8
Feterita-Hyd.	182-H	42.6
Kafir Group:		
Std. Blackhull	71	42.3
Std. Blackhull	204	30.3
Dwf. Blackhull	628	40.6
Dawn	340	35.4
Sunrise Select head to row	472	39.2
Sunrise Bulk seed	472	23.9
Sunrise Bagged heads	472	39.6
White African (T-11)	566	44.2
White African (Dwf)	566	37.2
White	570	29.0
Pink	432	40.2
Red	34	36.2
Kafir-durra hybrid,	240-3	23.6
Miscellaneous Group:		
Darchet kaoliang sel.	310-1	23.0
Darchet kaoliang sel.	310-4	22.4
Darchet kaoliang sel.	310-7	20.4
Manchu kaoliang	171	10.3
Valley Brown kaoliang	309	12.3
Dwarf hegari	620	12.3
Dorso	615	25.2
Schrock kafir	616	27.6
Shallu	63	31.3
Freed sorgo,	350	22.4

The Dwarf hegari broke up again this season as it did in 1916, hence its poor yield. The brown kaoliangs were heading during the drought of the latter part of July and first of August and were badly damaged thereby.

Date-of-seeding Experiments with Grain Sorghums:

Variety and date			
Dwarf milo, C. I. No. 332	Bu. per acre.	Feterita, C. I. No. 182	Bu. per ac
April 18	31.3	April 30	42.0
April 30	42.5	May 16	42.0
May 16	39.7	June 1	42.0
June 1	54.4	June 15	44.3
June 15	35.2	July 1	36.3
July 1	40.1	July 15	21.1

Sunrise kafir, C. I. No. 472	Bu. per acre.	Dawn kafir, C.I.No.340	Bu. per acre
April 16	32.7	April 30	[illegible]
April 30	34.1	May 15	[illegible]
May 15	36.3	June 1	[illegible]
June 1	36.9	June 15	[illegible]
June 15	29.2		
July 1	26.4		

Darchet kaoliang, sel. 1, C.I.No. 310-1		Blackhull kafir, C.I.No.[illegible]	
April 30	39.7	April 30	39.[illegible]
May 16	39.7	May 16	42.[illegible]
June 1	43.4	June 1	43.1
June 15	45.1	June 15	38.8
July 1	37.3		
July 15	26.3		

Maximum temperature for last half of December, 83° on December 31, minimum for same period, 5° on December 23 and 24.

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker)(Nov. 30) During the first week of November, warm clear weather prevailed in nearly all parts of the State, with temperatures above normal and no rain. Wheat was reported as in poor condition in the western half of the State, where it was furnishing very little pasture for stock.

In the second week measurable precipitation was reported only in the northeastern and north central counties, where there were light rains and snow flurries. Temperatures dropped to freezing several nights, going as low as 12 to 20° in the western counties. Wheat in the central and western counties continued to deteriorate and show a yellowish or brownish color and was making little growth. In the eastern one-third of the State the early sown wheat was looking good and furnishing pasture. The later sown fields were not doing as well and the crop was in need of moisture in all parts of the State.

During the third week, cold dry weather prevailed except in a few favored localities in the eastern and northwestern counties, where from a half to 2 inches of snow fell. Temperatures on the 19th and 21st ranged from 5 to 10° in the western half of the State and 15 to 20° in the eastern half. Wheat continued to deteriorate in all parts of the State, the only favorable reports coming from the extreme northwestern and eastern counties. In the important wheat producing counties in central Kansas wheat was reported as approaching a critical condition due to the continued dry weather.

During the fourth week of the month there was no precipitation sufficient to benefit wheat. Minimum temperatures ranged from 3 to 10° in the western half of the State, with severe freezes in the eastern half. Wheat continued to deteriorate. In the western half of the State only 10 to 25 per cent was reported as covering the ground and much of this had a yellow or brownish color. About 75 per cent of the wheat in the eastern counties was reported as being in good condition.

At Manhattan, the maximum temperature was 76° on November 4 and 5, and the minimum, 17° on the 19th. No measurable precipitation fell during the month. A trace was reported on November 6, 9, 17, and 18.

We recently completed the examination of the heads from 130 rows of F_4 Red Amber x Feterita hybrids grown at the Agronomy Farm last summer. About 90 white-grained heads were selected from the juicy stalked rows and a smaller number from the pithy stalked rows and the rows which segregated for this character. These will be continued in head rows next year.

Heads of more than 100 head rows of Kansas Orange sorgo grown at the Agronomy Farm last season have also been examined and bulk selections made of the highest yielding strains for increase plats. It was found that this variety as it has been grown by the college consists of a number of very distinct types. A small proportion of red-glumed plants occurred in the bulk seed. Several pure breeding head rows of this type were isolated and will be continued and their value determined in comparison with the usual black glumed type.

Following are the yields of sorghum varieties on botton land on the Agronomy Farm, Manhattan, Kans., in 1921.

Groups and Varieties	Yield Per acre	
	Stover, tons.	Grain, bushels(a)
Grain Sorghums:		
Dwarf Hegari	3.9	85.7
Red Kafir	4.8	82.2
Blackhull kafir(four checks)	3.2	79.5
Blackhull kafir(Lubbock 153)	3.5	79.5
Pink kafir	4.2	75.9
Dawn kafir	4.1	70.5
Sunrise kafir	6.5	70.0
Early Red kafir	2.5	68.6
Dwarf Yellow milo	2.2	75.0
Spur feterita	2.7	75.0
Feterita	3.1	65.7
Dwarf White milo	1.9	41.1(poor stand)
Forage sorghums:		
Kansas Orange	6.5	51.0
Sumac	6.3	77.0
Red Amber	4.7	35.0
Dwarf Sumac	3.7	91.0
Fread	3.4	29.0
Miscellaneous varieties:		
Darso	2.5	95.0
Schrock	3.6	78.6
Sudan corn	4.9	38.0
Kussorita	2.5	33.0

(a) Grain sorghums figured on basis of 56 lbs. per bu.; forage sorghums figured on basis of 50 lbs. per bu.

Yield determined from 2 inside rows of a 4 row plat of each variety.

The varieties are classified as grain sorghums, forage sorghums, and miscellaneous varieties. The varieties of grain sorghum are arranged in the order of grain yield, while the forage sorghum varieties are arranged according to yield of stover.

It will be noted that in the grain sorghum group Dwarf Kafir made the highest yield and that one of the strains of Red Kafir made a slightly higher yield than Blackhull kafir used as a check. The pure-line selection of Blackhull known as No. 153 and distributed from the Lubbock, Texas, Substation yielded as well as but no better than the Standard Blackhull White Kafir as grown in Kansas. Pink kafir made a better grain yield than either Dawn or Sunrise kafir but the stover yield of Sunrise kafir was higher than any other variety of grain sorghum and was almost equal to the stover yield of Kansas Orange, the highest yielding sweet sorghum. Dwarf Yellow milo made a better yield than usual at Manhattan but did not yield as well as the best varieties of kafir. Spur feterita made a higher yield than common feterita this season when moisture was sufficient for normal growth and the growing season long enough to allow ample time for maturity.

In the forage sorghum group Kansas Orange made the highest yield of stover, closely followed by Sumac. Dwarf Sumac made a very high yield of seed.

Of the miscellaneous varieties, Darso made the highest grain yield but the stover yield was rather low. The grain yield of Schrock was about equal to that of Blackhull kafir but in quality the seeds resemble the sweet sorghums. The two white seeded varieties distributed by L. Willis Smith of Kismet, Kan., known as Sudan corn and Husserita, did not make a very high grain yield and cannot compete with the best forage varieties in yield of stover.

Following are the 1921 yields of corn varieties grown on upland on the Agronomy Farm, at Manhattan:

Variety.	Bu. per acre (a)
Iowa Silvermine	70.3
Shawnee White	70.1
Pride of Saline (checks)	68.6
Commercial White	68.6
Iowa Goldmine	65.6
Kansas Sunflower	64.7
Golden Beauty	62.6
Kaw Chief (yellow dent)	62.1
Boone County White	61.7
Hildreth (yellow dent)	61.5
Reid Yellow Dent	61.3
Midland (yellow dent)	58.1
Longfellow Yellow Dent	55.9
Freed White Dent	53.4
Funk 90-day (yellow dent)	53.4
Regier Yellow Dent	52.5
Griffee Yellow Dent	51.1
Pride of North (yellow dent)	45.7
Colby Bloody Butcher	39.4
Early Yellow Muscatine	34.7

(a) Average of two plats, two rows each.

A number of yellow dent varieties grown in sections of Kansas were added to the varietal series this year because of the increasing interest in yellow corn from the feeding standpoint due to the recent information on its higher vitamine content. It will be noted that the four highest yielding varieties are white dent varieties, though Kansas Sunflower, probably the most popular yellow dent variety in Kansas, made a very good yield. The earlier maturing varieties such as Freed White Dent, Funk 90-Day, and Colby Bloody Butcher made relatively lower yields this season when moisture was sufficeint and the growing season long enough to favor the late maturing types.

Following are the average yields of corn varieties grown on upland soil on the Agronomy Farm, Manhattan, Kan., from 1916 to 1921.

Ave. No days to mature	Name.	Yield, bushels per acre 1916	1917	1918	1919	1920	1921	Average
115-120	Pride of Saline	40.2	26.1	6.1	28.7	54.7	68.6	37.4
105-110	Iowa Silvermine	51.9	16.8	11.2	30.0	56.0	70.3	36.0
125-130	Kansas Sunflower	51.4	35.7	1.6	18.1	43.6	64.7	35.9
125-130	Commercial White	27.9	28.2	1.8	21.4	56.7	68.6	34.1
105-110	Freed White dent	40.8	17.7	17.7	33.3	31.8	58.4	32.5
95-100	Colby Bloody Butcher	36.1	25.2	22.3	25.8	41.4	39.4	31.7
120-125	Boone County White	39.2	23.4	3.1	23.4	37.1	61.7	31.3
115-120	Reid Yellow Dent	32.4	22.2	8.1	24.4	35.0	61.3	30.6

It will be noted that only two yellow dent varieties have been included in the test throughout the 6 year period. The two highest yielding varieties are both white dent varieties, though the yield of Kansas Sunflower is practically equal to that of Iowa Silvermine and only 1.5 bushels less than Pride of Saline, the highest yielding variety. Had the test been located on bottom land Commercial White might have yielded as much as or more than Pride of Saline. The early varieties such as Freed White Dent and Colby Bloody Butcher are only a few bushels below the highest yielding variety for the reason that these early varieties made a creditable yield in 1918 when the late maturing varieties were almost a total failure.

Hays Branch Station, Hays, (A. F. Swanson) (Dec. 16.) The snow which fell on December 3 has melted and was followed by warm weather which has caused some of the wheat to sprout. With some more moisture the situation would be greatly improved. The snow was not general over the western part of the State and in some place drifting took place. Wheat which was stubbled in thoughout the snow belt will have some chance to make a crop since it got the most moisture and will not blow.

The following yields were obtained in the date-of-seeding experiment with oats and barley in 1921. The seedings were made in duplicate fiftieth acre plots.

Variety and date of seeding.	Yield bushels per acre.
Fulghum oats, C. I. No. 708:	
February 17	31.0
March 15	48.3
April 21	14.4
Stawropol barley:	
February 17	11.5
March 15	37.9
April 21	33.8

The oats and barley seeded on February 17 suffered severely from the heavy freeze of March 27 after it had been growing for several weeks. The late seeding of oats was injured by drought.

COLORADO

Agricultural College, Fort Collins (Barberry Eradication, C. D. Leamn, Col.) No report.

Akron Experiment Farm, Akron (F. A. Coffman) No report.

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication A. F. Thiel). No report.

WYOMING

Cheyenne Experiment Farm, Cheyenne (A. L. Nelson) (Dec. 14.) The first week of the month was rather cold but the past one has been very pleasant. On the 2d a snow fell which amounted to 0.28 inch of precipitation. This snow in connection with the warm weather which followed, caused most of the winter wheat to emerge. The greatest danger now to the crop on fallow is soil blowing. Following are the yields of winter wheat for the past year:

C. I. No.	Variety	Yields, bushels per acre. Oat Stubble	Fallow	Average.
6231	Blackhull	17.3	33.3	25.4
1571	Turkey	15.2	27.2	21.2
2998	Turkey	13.2	26.2	19.7
1583	Kharkov	16.2	25.2	20.7
1442	Kharkov	13.9	27.9	21.9
1432	Crimean	15.5	25.5	19.5
1437	Crimean	16.4	28.3	22.4
1539	Crimean	19.2	2[illegible].2	23.7
1532	Crimean	17.2	24.4	20.8
2979	Alberta Red	19.7	25.7	22.7
2908	Malakov	15.5	29.8	22.6
1543	Beloglina	14.2	25.4	19.8
1559-2-2	Turkevir	16.7	24.7	20.7
5146	Kanred	19.2	26.0	22.6
6213	Red winter	16.2	26.3	21.2
5797	Alberta Red(Kans.2043)	19.0	25.5	22.3
6155	Minturki(Minn. No.1507)	5.9	20.1	13.0
5149	Minturki(Minn. No.1505)	6.9	22.7	14.8
1583-30	Kharkov	7.9	31.0	19.5
3500	Buffum No. 17	10.2	17.2	13.7
1438	Ghirka	15.2	27.5	21.4

It is well to note that Minturki and Minhardi were seeded September 20 and Kharkov 1583-30 was seeded September 15, while the other varieties were seeded September 10.

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, Lynn D. Sutton) No report.

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel) (Dec. 30) A subject matter school for extension workers was held at the college December 5 to 13. Among the interesting speakers obtained for the school was Dr. E. C. Stakman, who gave a number of lectures on cereal diseases

A plant disease conference was held in the laboratory of plant pathology December 13. The superintendents of the North Dakota experimental substations and members of the department of plant pathology were present.

W. E. Brentzel will leave Fargo next week for Madison, Wis., where he will remain for a few weeks to confer with experiment station workers on flax diseases.

State College of Agriculture, Agricultural College (Barberry Eradication, George C. Mayone). No report.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.) (Dec. 16) The first half of December has been generally cloudy, mild, and muddy. In contrast to the preceding semi-monthly period when the temperature rarely rose above freezing and went as low as fifteen below zero the temperature during the first half of December was well above freezing on all but three days and dropped as low as 8° only on December 15. The next lowest temperature recorded during this period was 13° on December 7.

Maximum temperature for the period was 50° on December 13; minimum, 8° on December 15; precipitation 0.12 inch, which fell December 14 and 15.

The snow which had fallen during November practically all melted except in spots where it drifted heavily. Most of this moisture must have soaked into the ground as the ground was not frozen very deep and thawed out completely during this warm spell. As a result of the snow fall on December 14 and 15 and the drop in temperature the ground is again covered with a thin layer of snow.

The winter wheat, from which the snow covering had melted completely by December 14, was green at that time and appeared to be growing.

The total precipitation for the year to date already exceeds that for any year since 1915.

The flax sown in the greenhouse is doing very well. The plants which are getting the electric light in the evenings are already conspicuously well ahead of those that are getting only the usual daylight. The light is turned on between 4:00 and 4:30 p.m. and is shut off automatically at 10:00 p.m.

(Jan. 3.) Conditions during the last half of December have been about normal for this time of year. Maximum temperature for this period was 33° on December 29 and 30, the only days during this period when the temperature rose above freezing. Minimum temperature for the period and for the year 1921 was -28° on December 24. Temperatures below zero were recorded on the ten consecutive days Dec. 18-27 inclusive and also on December 31. Snow fell on December 17, 18, 19, and 31, amounting to a total precipitation of 0.12 inch for the last half of December and 0.24 inch for the whole month of December. Wind velocity for the twenty-four hours December 26 was only 0.3 miles per hour, which is the lowest average wind velocity ever recorded for a 24-hour period at Mandan.

The flax in the greenhouse which is getting additional light is very much taller and more vigorous than the plants which are getting the usual period of daylight. To date, however, no flower buds have appeared.

Dickinson Substation, Dickinson (Ralph W. Smith) (Jan. 2.) The first half of December was very mild and some of the snow melted away. The latter half of the month was colder than usual, making the mean temperature for the month about 17 degrees, which is very nearly normal. The mean temperature for the month of November was 4.5 degrees below normal, averaging 23.6 degrees as compared with a normal of 28.1 degrees. The snowfall was somewhat above normal for both months, so that the winter grain has received fairly good protection since the first snowstorm of November 7.

The mean temperature for the year 1921 was 42.3 degrees, which is about 2 degrees above normal. Unusually high temperatures prevailed last winter and again last summer. The severity of the drought last summer was due to the extremely hot weather, combined with a lack of surplus moisture in the soil and uneven distribution of rainfall in the summer. The total precipitation for the year 1921 was 15.68 inches, which was about a half inch above normal

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May) (Dec. 12.) Since the last report the weather has been remarkable for mild temperatures for this season of the year. We have had no freezing weather to speak of during the last two weeks. The snow has practically all melted, leaving the surface soil well supplied with moisture. The weather is almost ideal for fall-sown wheat but it is also favorable for the grasshoppers which will be very numerous next summer if we do not have a sufficiently hard winter to kill the eggs. Fall-sown wheat on clean summer fallow seldom looks better at this season than did the 1921 crop.

The straw mulch on the plats under the furrow-drill straw mulch tests was spread on top of a layer of snow on December 5 and 6. The snow melted, permitting the straw to settle to the ground. If we should have a period of dry windy weather now the straw will mostly blow away as usual.

Considerable progress has been made on the annual report from this station during the last few weeks. The report should be completed during the latter part of January. A few errors in grain yields as presented in an earlier issue of the Courier have been found while checking the data for the annual report, but as a rule the errors have not resulted in changing the relative standing of varieties. The yields of Silvermine, C. I. No. 714, and Banner, C. I. No. 731, oats should have been reported as 56.5 and 61.6 bushels, respectively, instead of 56.6 and 61.3 bushels.

The large machine shed which is being constructed here is nearly completed. Director F. B. Linfield of the Montana Agricultural Experiment Station visited here December 9 to inspect the construction of the shed and to confer with the station staff concerning official matters.

(Dec. 28.) Since December 13 about a half inch of precipitation in the form of snow has fallen, practically all of which still lies on the ground. The snow has not drifted from the fields as it usually does and is not likely to drift now as a hard covering has formed over the surface. There was considerable moisture in the surface soil when the last snows fell, and consequently prospects are still good for winter wheat.

Grasshoppers were very numerous in this section last fall and if weather conditions remain favorable for the eggs there will probably be an enormous damage to the crops next summer by the grasshoppers. We have had some very low temperatures since the last snows have fallen, but the grasshopper eggs were protected by the deep blanket of snow and it is doubtful whether there is sufficient moisture in the soil for low temperatures to be fully effective in killing the eggs. If the snow we now have melts soon and sinks into the soil it is probable that low temperatures will yet kill most of the grasshopper eggs before spring opens.

The lowest temperature we have had so far this winter was -31° on December 20. It has been from 10 to 25 below several times since the 12th of the month. The highest temperature attained all day December 19 was -16°.

Considerable progress has been made on the 1921 annual report from this station. After our annual reports are completed, Supt. Albert Osenbrug and I expect to prepare a joint Montana bulletin on winter and spring wheat.

WESTERN BASIN AND COAST AREAS
(North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (A. E. McClymonds) No report.

OREGON

Sherman County Branch Station, Moro (D. E. Stephens). No report.

Following are the yields of the winter wheats at the Nephi Substation for 1921:

Variety	C. I. No.	Yield per acre, bushels. Ist. ser.	2d. ser.	3d. ser.	Average
Turkey	2992	23.0	36.7	39.0	33.6
Crimean	1437	25.5	35.5	40.5	33.8
Bulgarian	2048	26.0	33.2	37.2	32.8
Kharkov	1442	28.2	31.5	37.8	32.7
Armavir	1355	24.3	31.2	36.5	30.7
Alberta Red	2919	24.7	28.0	44.2	32.7
Beloglina	1544	25.0	35.5	35.2	31.9
Ghirka Winter	1438	30.8	33.5	35.8	33.4
Kofod	2937	24.0	29.8	34.5	29.4
Gold Coin	2936	23.3	31.2	40.2	31.6

Variety	C. I. No.	1st. ser	2d ser.	3d. ser.	Average.
Odessa	3274	27.3	28.0	29.0	28.1
Red Winter	6213	24.0	25.7	34.8	28.2
Black Hull	6251	33.8	31.2	38.8	34.6
Minturki	6155	35.2	34.2	30.0	36.1
Kanred	5146	36.0	36.8	40.2	37.7
Alberta Red	5797	33.2	29.5	30.8	31.2
Minhardi	5149	32.2	31.5	35.8	36.5
Wash. Hybrid	4326	33.2	42.2	30.2	35.2

Following are the yields of spring wheats at the Nephi Substation for 1921.

Variety	C. I. No.	Ser. 1.	Ser. 2.	Average.
Pac. Bluestem	4067	13.3	8.3	10.8 bu.
Dicklow	3663	12.0	7.0	9.5
Galgalos	2398	15.0	10.0	12.5
Early Baart	1697	21.0	19.0	20.0
Saumur	2346	25.7	23.0	24.4
Koola	2203	20.0	25.0	22.5
Chul	2227	22.7	30.0	26.3
Little Club	4066	10.0	17.3	13.6
Marquis	4158	16.0	21.0	18.5
Ghirka	1517	13.0	20.5	16.7
Defiance	5542	12.3	27.0	19.6
Reg. Defiance	5543	13.0	12.7	12.8
Kota	6248	14.3	21.2	17.7
Oudenbaard	6228	7.7	20.3	14.0
Hard Federation	4733	8.0	21.3	14.6
White Federation	4981	9.7	22.3	16.0
Federation	4734	10.7	22.0	16.3
Peliss	1584	7.0	22.2	14.6
Arnautka	1494	11.0	19.7	15.3
Adjini	1594	9.0	20.0	14.5
Velvet Don	2247	6.7	20.8	13.7
Moh. Ben Bachir	2087	12.0	19.5	15.7
Sevier		8.3	19.3	13.8

Following are the yields of spring wheats from fall sowing at the Nephi Substation in 1921:

Turkey	2998	19.7	27.0	23.3 bu
Polish		9.0	13.7	11.0
White Federation	4981	25.3	31.0	28.1
Hard Federation	4733	24.3	29.0	26.6
Sevier		25.3	38.8	32.0
Marquis	4158	26.7	28.7	27.7
Kubanka	1440	20.7	22.0	21.3
Little Club	4066	20.7	27.3	24.0
Reg. Defiance	5543	20.3	15.0	17.6
Early Baart	1697	22.3	26.7	24.5

CALIFORNIA

Rice Field Station, Biggs. (J. W. Jones) No report.

Plant Introduction Station, Chico. (V. H. Florell) No report.

Agricultural Experiment Station, Davis and Berkeley (F. N. Biggs and W. W. Mackie) (Dec. 19) During the latter part of November sufficient rain fell to permit the preparation of an excellent seed bed for the plats at Davis. On December 9th the seeding of the plats was completed by W. W. Mackie and F. N. Briggs. The plats included:

Barleys resistant to scald	936 rows
Varietal tests with bunt	333 rows
Seed treatment to control bunt	646 rows
Bunt resistant hybrids	498 rows
Surviving plant tests	244 rows
Wheat varieties resistant to stem rust	226 rows
Wheat hybrids resistant to stem rust . . .	1,163 rows
Oats resistant to stem rust	59 rows

In addition to the control plats at Davis, plats of disease resistant varieties were seeded as follows:

Stem-rust resistant oats:

Gardena, Los Angeles County	59 rows
Eureka, Humboldt County	59 rows
El Centro, Imperial County	59 rows
Kearney Park, Fresno County	59 rows

Stem-rust resistant wheats:

Lancaster, Los Angeles County	96 rows
Paso Robles, San Luis Obispo County . .	90 rows
El Centro, Imperial County	301 rows
Kearney Park, Fresno County	151 rows
Escondido, San Diego County	93 rows

Scald-resistant barleys:

Redondo, Los Angeles County	78 rows
El Centro, Imperial County	150 rows
Kearney Park, Fresno County	78 rows
Fairfield, Solano County	78 rows
Paso Robles, San Luis Obispo County .	78 rows

To date the rainfall of the State is about half normal causing delay in seeding and much concern among farmers in the drier portions of the State.

F. N. Briggs has taken his annual leave, going to his home in Hope, Arkansas, for the holidays.

Dr. Ruth F. Allen has completed rust tests in the greenhouse with a large number of wheat hybrids and is continuing her cytological studies on the behavior of resistant and susceptible wheats under stem rust attack.

Cooperative demonstrations with copper carbonate dust treatment of seed to prevent bunt are being conducted with the Extension Service in 15 counties, covering 27 demonstrations.